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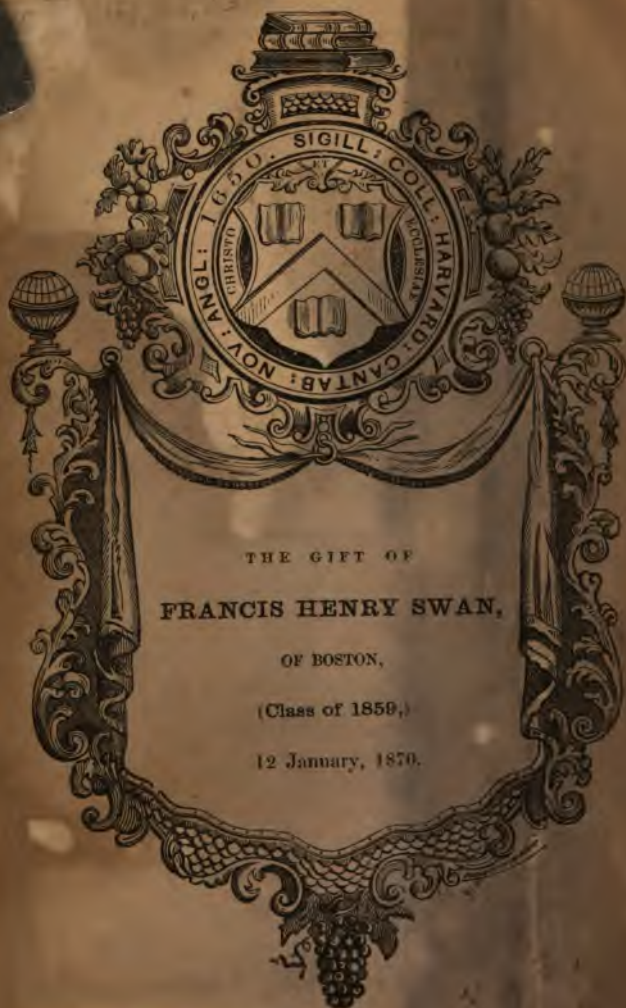
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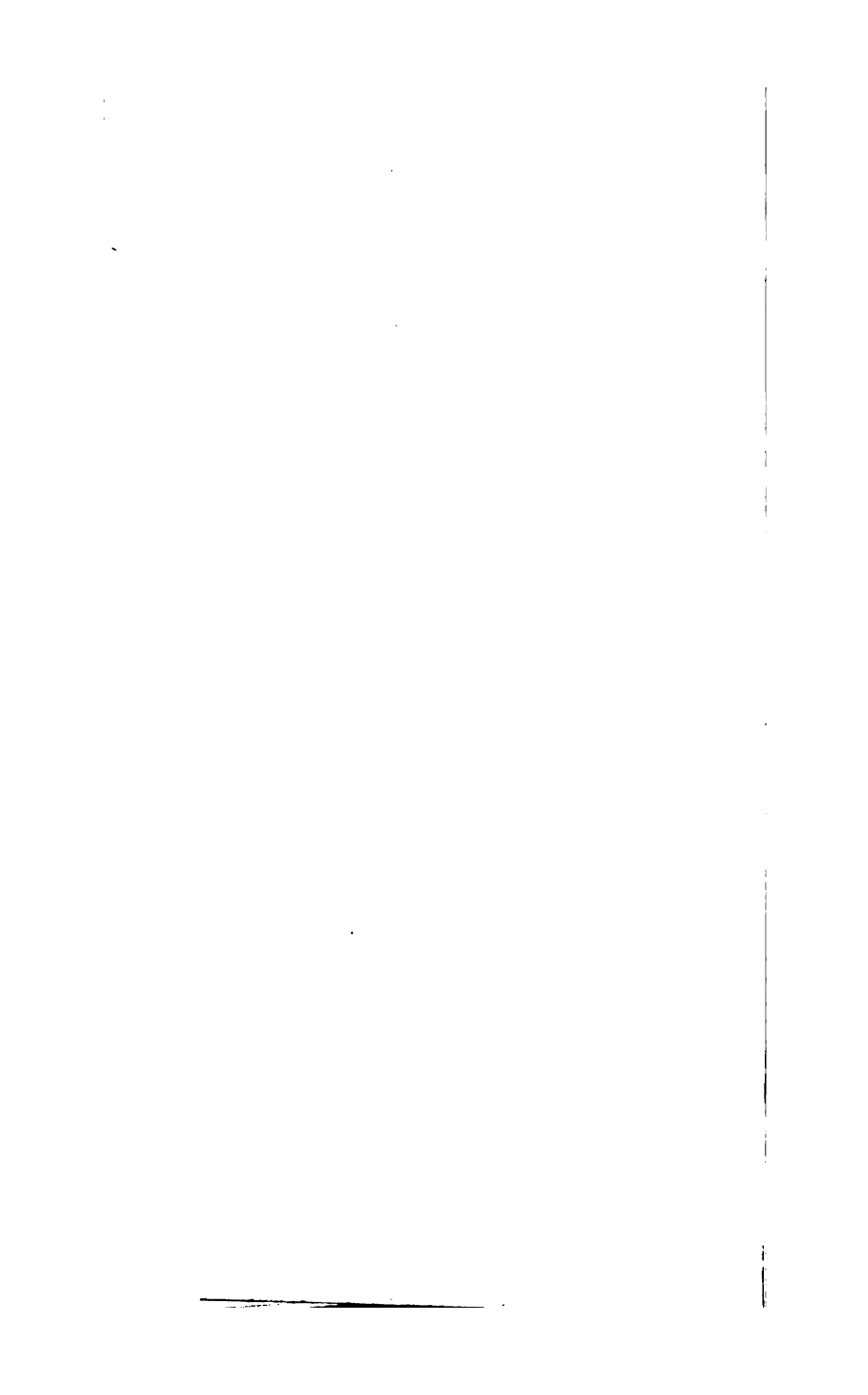
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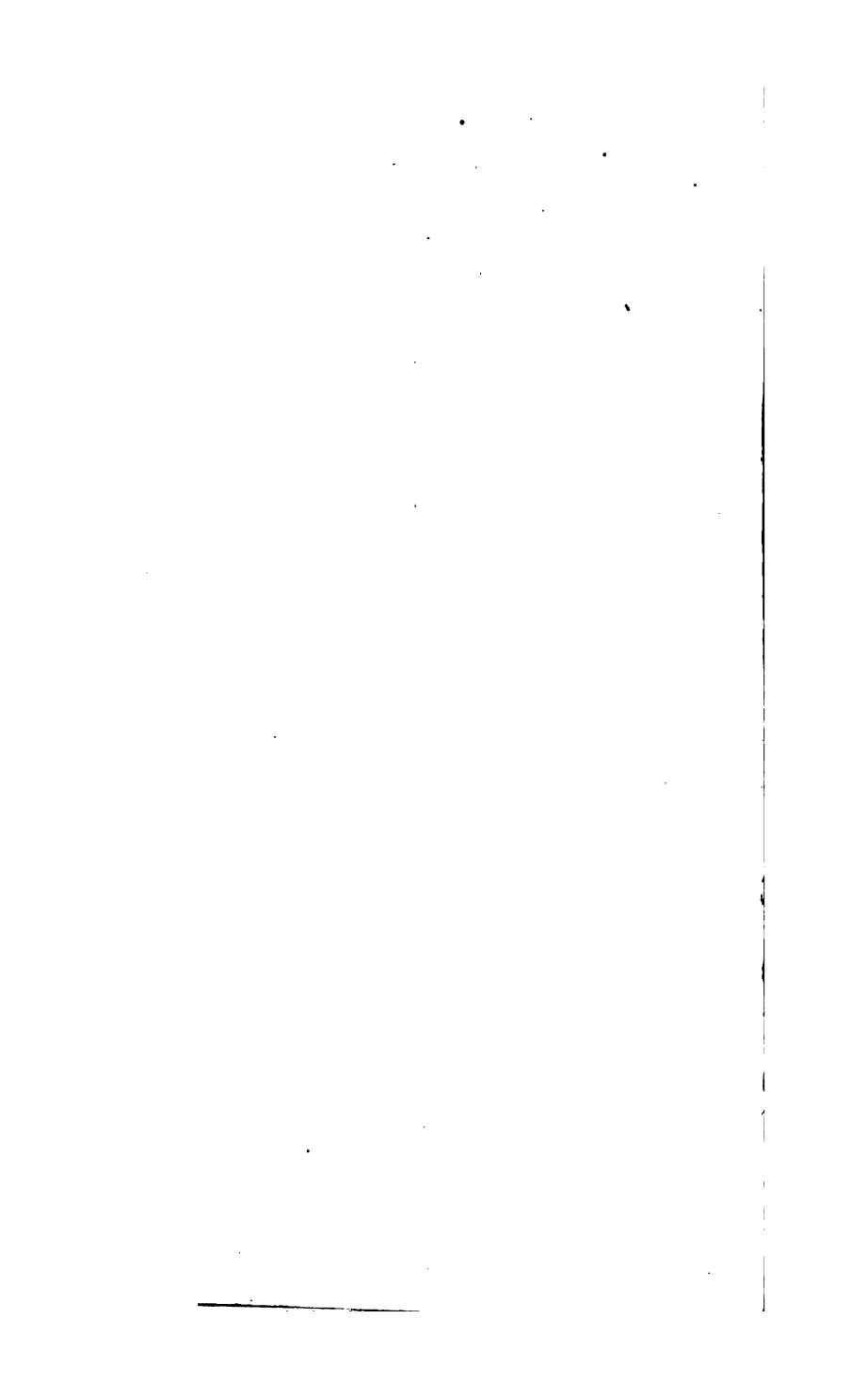




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Books 319

Ways of Providence. 296-



INSTRUCTIVE EXTRACTS:

COMPRISING

RELIGIOUS AND MORAL INSTRUCTION;
NATURAL HISTORY; ELEMENTARY SCIENCE;

ACCOUNTS

OF

REMARKABLE PERSONS, PLACES, MANNERS, ARTS, AND
INCIDENTS;

WITH A SELECTION OF

PASSAGES FROM THE BRITISH POETS,

AND VARIOUS ARTICLES NEVER BEFORE PUBLISHED.

BY THE

AUTHOR OF THE EDINBURGH SESSIONAL SCHOOL-BOOKS.

SIXTH EDITION.

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PREFACE.

By means of the system of instruction introduced into the seminary, for the use of which the former works of the same series were primarily compiled, a much larger proportion of the pupils were enabled to read and understand the most advanced of those works, than had been at all anticipated at the time of its publication. It became desirable, therefore, to furnish the *older* scholars with an additional book, which might afford them more interest and information, than could be expected from the continued perusal of those, with which they were already familiar. This *desideratum*, accordingly, the compiler was requested to supply: and such a request, proceeding from the quarter, on every account, best entitled to attention, in all matters connected with that institution, met with a ready compliance upon his part. In the execution of the humble, but perhaps not altogether unimportant, task committed to him, he has been, in a great measure, guided by the following considerations. Keeping in view the age of the children, whose benefit was, on the present occasion, contemplated,—the previous training which their minds had undergone,—and the extent of information, which, under this discipline, they had already acquired and displayed,—he was induced to think, that the work now called for, in order to be of material

service to such pupils, should be of a somewhat higher cast than those which preceded it ; and might well embrace instructive subjects, which would have been extremely ill adapted, either to the understanding, or the taste of more infantine and less practised minds.—It is with no view, accordingly, to those initiatory schools, which are left by the pupils at an early age, in order that they may commence their classical studies elsewhere, that the present work has been undertaken. It was intended, in the first place, for the use of the Edinburgh Sessional School, and of those other seminaries, such as the parish schools, where the youth remain beyond that period of life, and not unfrequently receive all the education to which they are permitted to aspire. It was hoped, too, that it might be found of service in those classes which are opened for more advanced readers, who might thus, along with their usual instruction in the knowledge of history, geography, and the arts of reading and grammar, acquire, at the same time, a little more general information, and, what is still more important, a taste for the acquirement of such information. The plan, likewise, seems to fall in with what, it is hoped, will be found a most important improvement in modern education, the system recently introduced into our most celebrated classical seminaries, of combining English reading and general instruction with the other studies of the pupils. Young persons, also, to whom it is not prescribed as a school-book, may perhaps derive from this selection entertainment as well as instruction: this object, at least, has been kept in view, and, without wandering into the regions of fiction, attention has been paid to the gratification of the peculiar tastes of that period of life.—In order to ensure the articles being all level to the capacities of those, for whom they are intended, not one of them, which appeared at all of doubtful adaptation, has been admitted, without having been put to the test of rigid experiment. The scientific articles,

in particular, were all of them repeatedly read over in manuscript, to the highest class of the Sessional School, who, at the same time, underwent a most minute and strict examination upon the subjects contained in them; and every article, which was found at all obscure, was immediately rejected, or else modified for the purpose of rendering it more generally intelligible and useful. It was principally with a view to this object that the compiler found it advisable to draw up these articles himself, rather than implicitly to adopt (as he originally intended) extracts from other publications. All those articles, accordingly, which have no author's name annexed to them, or are not marked as anonymous, are of this description. To originality, indeed, few of them have the very slightest claim. Those who are acquainted with that excellent work, "Conversations on Natural Philosophy," will at once perceive how much the articles on that subject, in the present volume, are indebted to the valuable labours of Mrs Marcet.—With regard to those articles, which expressly bear to have been taken from other works, it is necessary, in justice to the authors, to explain, that, in order to adapt them to the present purpose, it has been found necessary, on many occasions, to take the greatest liberties, and to make very considerable alterations. Some are mere abridgments; in others, besides abridgment, the order of the passages has been altered; and sometimes notes have been thrown into the text.—In the selection of articles for the present purpose, no use has, on any occasion, been made of former compilations. Several of the poetical extracts, indeed, the compiler was, from the first, aware, had appeared in former collections, as they probably will do in all subsequent ones. Of the prose extracts, he, at the time, knew only of one, (that on "the Division of Labour,") which stood in this situation. But on examining the proof-sheets, his friends have pointed out one or two more, to which they think the same observation applies,

though he himself was quite unaware of it. For a few articles never before published, he feels himself very deeply indebted to their contributors, well knowing that they cannot fail to be esteemed a valuable addition to his volume.—In justice to himself, he is called upon to add, that, neither at the time of planning nor of executing the present undertaking, (with the exception of the latter part of it,) was he in the slightest degree aware, that any other work upon similar principles was in contemplation. One indeed, somewhat resembling the present, has lately made its appearance. Of that work, however, he had never heard the slightest surmise, till the day of its actual publication. For many months previously to that period, the whole of the articles, which particularly distinguish the present from former school collections, had not only been written, but had also been in use in the seminary formerly referred to, while yet in manuscript; and had, moreover, been announced to the visitors on public days, as composing part of a new school-book, then in preparation for the press.

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INSTRUCTIVE EXTRACTS.

SECTION I.

RELIGIOUS INSTRUCTION.

ON GOD.

OF all the attainments, to which, in a certain degree, human nature is permitted to aspire, the knowledge of its Divine Author is undoubtedly at once the noblest, the most deeply interesting, and the most essentially important. Shall man take pride to himself in investigating the laws of nature, in contemplating the magnificent arrangement of the heavenly orbs, the curious structure of his own body, and the more curious workings of his soul? Shall he boast of every discovery which he makes, regarding the properties of each stone upon which he treads, each flower that diffuses its fragrance around him, each insect that flutters in the gale? And shall his soul not burn with the loftier ambition of rendering himself acquainted with that Being, to whom all things owe their existence, their beauty, their harmony, their utility: *who spake, and they were made, who commanded, and they stood fast*:

“ Who gives its lustre to an insect’s wing,
And wheels his throne upon the rolling worlds ?”

Shall man take delight in going back to former ages, and tracing the past history of his own species ; in

reading of the exploits of heroes, the intrigues of statesmen, the discoveries of philosophers,—the revolutions of kingdoms, the improvements in science or in arts, the chequered fortunes of distinguished individuals? And shall he take no pleasure in tracing, amid all these passing events, the operations of Him, who alone saw the end from the beginning; in whose overruling hand, the feeble actors, while aiming only at selfish and private ends, were rendered instruments for the accomplishment of his wise and benevolent designs; and who, *sitting above the flood*, hath all along directed and controlled its mighty course, *making the wrath of man to praise him*, and saying to it in its most impetuous career, as to the raging ocean, “*Hitherto shalt thou come, but no further, and here shall thy proud waves be stayed?*” And is man called by no still more deeply interesting motive, than that of curiosity, to the knowledge of his God? If he wish for happiness, where else can he seek it, but in the favour of that great Being, in whose hand are the issues of all things? or how can he hope to obtain *His* approbation, of whose nature and terms of acceptance he is contented to remain in utter ignorance? No. The voice of interest, no less than of duty and of honour, summons him to that *fear of the Lord, which is the beginning of wisdom, and that knowledge of the Holy, which is understanding*. Let not, then, the wise man glory in his wisdom, let not the mighty man glory in his might, let not the rich man glory in his riches: but let him that glorieth glory in this, that he understandeth and knoweth God.—“That there is a God,” indeed, “all nature cries aloud through all her works.” *The heavens declare his glory, and the firmament sheweth his handiwork: day unto day uttereth speech, and night unto night sheweth knowledge of their great Creator*. In no age, however dark,—no clime, however ungenial,—no nation, however barbarous,—hath the Almighty *left himself without witness*; and there is scarcely any language, however rude, which hath not been tuned to accents of Divine adoration and praise. But weak and imperfect, dark and unamiable, have ever been the notions, which unassisted reason hath

been able to form of the object of its worship. Who has not read, with feelings of horror and disgust, the accounts which are given of the idolatrous and superstitious observances of barbarous nations? But let us not forget, that it is not to savage tribes alone; such degrading and revolting views of the Divine nature have been confined. Look to the greatest, the wisest, and most celebrated nations of antiquity, while as yet unilluminated by the light of the Gospel. Behold Rome herself, while seated on her highest pinnacle of glory; the mistress of the world, which she adorned by her arts, no less than subdued by her arms. See her altars blazing to appease the wrath, and secure the favour of a crowd of wicked and conflicting divinities, whose aid she successively implored to confound each other's feeble counsels. In her vain imagination, every district, every element, nay, every the most malignant passion and degrading vice, had its own peculiar protecting deity. Her worship, accordingly, was of the most unmeaning, sanguinary, and too often licentious kind; and, from the observance of such rites, she returned, as might be expected, to the ready perpetration of the most odious vices, of which, without any call to repentance, her sacrifices held out to her an easy expiation; or to which she was still more strongly encouraged, by the example and approbation of those imaginary beings, before whose unhallowed shrines she had so impiously bowed. Nor, if we turn to ancient Greece, the proud seat of human learning, of science, and philosophy, does any more cheering prospect arise to dissipate the gloom. There conceptions of Deity no less unworthy and degrading, rites still more impure and unhallowed, manners no less profligate and revolting, than any which had ever disgraced the neighbouring nations, whom she haughtily accounted *barbarian*, present themselves to our view. A few, indeed, there were, of transcendent genius, the pride and glory of their age and country, who, by constant study and meditation, raised their minds to more exalted conceptions of the great First Cause of all. But their speculations were necessarily confined to themselves, and within their own schools, being of far too subtle and

refined a nature to benefit the great body of the people. And, as they were no better than speculations,—resting upon no surer evidence than the deductions of able, indeed, but erring men,—the wisest of these philosophers themselves hesitated not to point out to their disciples, the necessity of some clearer and more direct revelation, from the fountain of all truth. Such a revelation of himself, which had from the beginning been determined in the counsels of Divine providence, and for which, in one obscure region of the globe, the way had silently been preparing, it at length pleased the God of mercy to vouchsafe to his human offspring. *When the fulness of the time was come, God sent forth his Son.* Men were no longer left to the vague and unsatisfactory conjectures of their own minds upon the most important of all subjects; *the only begotten Son, which is in the bosom of the Father, he hath declared him.* He, whom *the Spirit of the Lord anointed to preach glad tidings to the meek,* disclosed the loftiest truths in a language which all might understand, and confirmed what he spake by evidence level to the capacities of all. *Not in the words which man's wisdom teacheth, but which the Holy Ghost teacheth,* Jesus of Nazareth, the reputed son of a carpenter, and his followers, humble and illiterate fishermen of Galilee, taught sublimer doctrines regarding the nature and attributes of God, and his dealings with the children of men, than had ever fallen from the lips of any philosopher, and with an authority to which no philosopher ever attempted to lay claim. By this revelation it was disclosed to man, that there is in nature but one God; a Spirit, possessing irresistible power, boundless wisdom, perfect holiness, impartial justice, unwearied goodness; filling the infinitude of space, and living through the countless ages of eternity; the parent of universal nature, and extending his providential care to every thing which he hath made; at once *the Keeper of Israel,* and *feeding the young ravens that cry;* the God and Father, alike, of the Jew and of the Gentile, of the Greek and of the Barbarian, of the bond and of the free; *dwelling in the high and holy place, with him also that is of an humble spirit;* and above all,

manifesting his love towards us, in that he sent his only begotten Son into the world, that we might live through him. How lofty, and, at the same time, how amiable; how awful, yet how animating and consoling, is the representation, which the Gospel has given us of the Supreme Disposer of all things! Happy they, who in early life imbibe, and in their mature years continue to cherish, sentiments like these! who see those attributes of divinity, which their infant minds were taught, displayed in every work of nature, in every event of providence, in every step of the glorious system of redemption; and who, grateful for the revelation which has, in their present imperfect state of existence, been vouchsafed to them, await in patience that greater hour, when they shall see their Creator as he is,—when they shall know, even as also they are known.

Original.

ON THE CREATION OF THE WORLD.

BEFORE the sun and the moon had begun their course, before the sound of the human voice was heard, or the name of man was known; *in the beginning God created the heaven and the earth.* To a beginning of the world we are led back by every thing that now exists; by all history; all records, all monuments of antiquity. In tracing the transactions of past ages, we arrive at a period which clearly indicates the infancy of the human race. We behold the world peopled by degrees. We ascend to the origin of all those useful and necessary arts, without the knowledge of which mankind could hardly subsist. We discern society and civilisation arising from rude beginnings in every corner of the earth; and gradually advancing to the state in which we now find them: all which afford plain evidence that there was a period, when mankind began to inhabit and cultivate the earth. What is very remarkable, the most authentic chronology and history of most nations coincides with the account of Scripture, and makes the period, during which the world has been inhabited by the race of men, not to extend beyond six thousand years. But, though there

was a period when this globe, with all that we see upon it, did not exist, we have no reason to think that the wisdom and power of the Almighty were then without exercise or employment. Boundless is the extent of his dominions. Other globes and worlds, enlightened by other suns, may then have occupied—they still appear to occupy—the immense regions of space. Numberless orders of beings, to us unknown, people the wide extent of the universe, and afford an endless variety of objects to the ruling care of the great Father of all. At length, in the course and progress of his government, there arrived a period, when this earth was to be called into existence. When the signal moment, predestined from all eternity, was come, the Deity arose in his might, and with a word created the world. What an illustrious moment was that, when from nonexistence there sprang at once into being this mighty globe, on which so many millions of creatures now dwell! No preparatory measures were required. No long circuit of means was employed. *He spake, and it was done, he commanded, and it stood fast.* The earth was at first without form and void : and darkness was upon the face of the deep. The Almighty surveyed the dark abyss ; and fixed bounds to the several divisions of nature. He said, *Let there be light, and there was light.* Then appeared the sea and the dry land. The mountains rose ; and the rivers flowed. The sun and moon began their course in the skies. Herbs and plants clothed the ground. The air, the earth, and the water, were stored with their respective inhabitants. At last man was made after the image of God. He appeared, walking with countenance erect, and received his Creator's benediction as Lord of this new world. The Almighty beheld his work when it was finished, and pronounced it good. Superior beings saw with wonder this new accession to existence. *The morning stars sang together ; and all the sons of God shouted for joy.*

Blair.

ON THE ARTLESS SIMPLICITY OF THE GOSPEL
NARRATIVES.

IN the gospel narratives there is little or no parading about their own integrity. We can collect their pretensions to credit from the history itself, but we see no anxious display of these pretensions. We cannot fail to perceive the force of that argument, which is derived from the publicity of the Christian miracles, and the very minute and scrupulous examination, which they had to sustain from the rulers and official men of Judea. But this publicity, and these examinations, are simply recorded by the Evangelists. There is no boastful reference to these circumstances, and no ostentatious display of the advantages, which they gave to the Christian argument. They bring the story forward in the shape of a direct and unencumbered narrative, and deliver themselves with that simplicity and unembarrassed confidence, which nothing but their consciousness of truth, and the perfect feeling of their own strength and consistency, can account for. They do not write as if their object was to carry a point that was at all doubtful or suspicious. It is simply to transmit to the men of other times, and of other countries, a memorial of the events, which led to the establishment of the Christian religion in the world. In the prosecution of their narrative, we challenge the most refined judge of the human character, to point out a single symptom of diffidence in the truth of their own story, or of art to cloak this diffidence from the notice of the most severe and vigilant observers. The manner of the New Testament writers does not carry in it the slightest idea of its being an assumed manner. It is quite natural, quite unguarded, and free of all apprehension that their story is to meet with any discredit or contradiction, from any of those numerous readers, who had it fully in their power to verify or to expose it. We see no expedient made use of, to obtain or to conciliate the acquiescence of their readers. They appear to feel as if they did not need it. They deliver what they have to say in a round

and unvarnished manner ; nor is it in general accompanied with any of those strong asseverations, by which an impostor so often attempts to practise upon the credulity of his victims. In the simple narrative of the Evangelists, they betray no feeling of wonder at the extraordinary nature of the events which they record, and no consciousness that what they are announcing is to excite any wonder among their readers. This appears to us to be a very strong circumstance. Had it been the newly broached tale of an impostor, he would, in all likelihood, have feigned astonishment himself, or, at least, have laid his account with the doubt and astonishment of those, to whom it was addressed. When a person tells a wonderful story to a company, who are totally unacquainted with it, he must be sensible, not merely of the surprise which is excited in the minds of the hearers, but of a corresponding sympathy in his own mind, with the feelings of those who listen to him. He lays his account with the wonder, if not the incredulity of his hearers ; and this distinctly appears in the terms with which he delivers his story, and the manner in which he introduces it. It makes a wide difference, if, on the other hand, he tells the same story to a company, who have long been apprised of the chief circumstances, but who listen to him for the mere purpose of obtaining a more distinct and particular narrative. Now, in as far as we can collect from the manner of the Evangelists, they stand in this last predicament. They do not write as if they were imposing a novelty upon their readers. In the language of Luke, they write for the sake of giving more distinct information ; and that the readers *might know the certainty of those things, wherein they had been instructed*. In the prosecution of this task, they deliver themselves with the most familiar and unembarrassed simplicity. They do not appear to anticipate the surprise of their readers, or to be at all aware that the marvellous nature of their story is to be any obstacle to its credit or reception in the neighbourhood. At the first performance of our Saviour's miracles, there was a strong and a widely spread sensation over the whole country. *His fame went abroad and all people were amazed*. This is quite natural ; and the circumstance of no surprise

being either felt or anticipated by the Evangelists, in the writing of their history, can best be accounted for by the truth of the history itself, that the experience of years had blunted the edge of novelty, and rendered miracles familiar, not only to them, but to all the people to whom they addressed themselves.

Chalmers.

ON THE UTILITY OF MIRACLES IN THE EARLY PROPAGATION OF THE GOSPEL.

UNLESS we admit that the founder of our religion did actually work the miracles ascribed to him by his historians, it is utterly impossible to account for the success and establishment of his religion. It could not, in short, to all appearance, have been established by any other means.—Consider only for a moment, what the apparent condition of our Lord was, when he first announced his mission among the Jews, what his pretensions and what his doctrines were, and then judge what kind of a reception he must have met with among the Jews, had his preaching been accompanied by no miracles. A young man of no education, born in an obscure village of obscure parents, without any of those very brilliant talents or exterior accomplishments, which usually captivate the hearts of men; without having previously written or done any thing, that should excite the expectation, or attract the attention and admiration of the world; offers himself at once to the Jewish nation, not merely as a preacher of morality, but as a teacher sent from heaven; nay, what is more, as the Son of God himself, and as that great deliverer, the Messiah, who had been so long predicted by the prophets, and was then so anxiously expected, and so eagerly looked for, by the whole Jewish people. He called upon this people to renounce at once a great part of the religion of their forefathers, and to adopt that which he proposed to them; to relinquish all their fond ideas of a splendid, a victorious, a triumphant Messiah, and to accept in his room a despised, a persecuted, and a crucified Master. He required them to give up all their former prejudices, superstitions, and traditions,

all their favourite rites and ceremonies, and, what was perhaps still dearer to them, their favourite vices and propensities, their hypocrisy, their rapaciousness, their voluptuousness. Instead of exterior forms, he prescribed sanctity of manners; instead of washing their hands, and making clean their platters, he commanded them to purify their hearts and reform their lives. Instead of indulging in ease and luxury, he called upon them to take up their cross and follow him through sorrows and suffering; to pluck out a right eye, and to cut off a right arm; to leave father, mother, brethren, and sisters, for his name's sake, and the gospel.—What now shall we say to doctrines such as these, delivered by such a person as our Lord appeared to be? Is it probable, is it possible, that the reputed son of a poor mechanic could, by the mere force of argument or persuasion, induce vast numbers of his countrymen to embrace opinions and practices, so directly opposite to every propensity of their hearts, to every sentiment they had imbibed, every principle they had acted upon from their earliest years? Yet the fact is, that he *did* prevail on multitudes to do so; and therefore, he *must* have had means of conviction superior to all human eloquence or reasoning: that is, he must have convinced his hearers, by the miracles he wrought, that all power in heaven and in earth was given to him, and that every precept he delivered, and every doctrine he taught, was the voice of God himself. Without this it is utterly impossible to give any rational account of his success.—In order to set this argument in a still stronger point of view, let us consider what the effect actually was, in a case where a new religion was proposed without any support from miracles. The impostor Mahomet began his mission with every advantage that could arise from personal figure, from insinuating manners, from a commanding eloquence, from an ardent enterprising spirit, from considerable wealth, and from powerful connexions. Yet, with all these advantages, and with every artifice, and every dexterous contrivance to recommend his new religion to his countrymen, in the space of three years he made only about six converts, and those principally of his

own family, relations and most intimate friends. And his progress was but very slow for nine years after this; till he began to make use of force; and then his victorious arms, not his arguments, carried his religion triumphantly over almost all the eastern world. It appears, therefore, that, without the assistance either of miracles or of the sword, no religion can be propagated with such rapidity, and to such an extent, as the Christian was, both during our Saviour's lifetime and after his death. For there is, I believe, no instance in the history of mankind of such an effect being produced, without either the one or the other. Now of force we know that Jesus never did make use: the unavoidable consequence is, that the miracles ascribed to him were actually wrought by him. *Porteus.*

ON OUR SAVIOUR'S PREACHING.

BOTH our Divine Master's matter and his manner were infinitely beyond any thing the world ever heard before. He did not, like the heathen philosophers, entertain his hearers with dry metaphysical discourses on the nature of the supreme good, and the several divisions and subdivisions of virtue; nor did he, like the Jewish rabbis, content himself with dealing out ceremonies and traditions, with discoursing on mint and cummin, and estimating the breadth of a phylactery. But he drew off their attention from these trivial and contemptible things to the greatest and the noblest objects,—the existence of one supreme Almighty Being, the creator, preserver, and governor of the universe; the first formation of man; his fall from original innocence; the consequent corruption and depravity of his nature; the remedy provided for him by the goodness of our Maker, and the death of our Redeemer; the nature of that divine religion, which he himself came to reveal to mankind; the purity of heart, and sanctity of life, which he required; the communications of God's Holy Spirit to assist our own feeble endeavours here; and a crown of immortal glory to recompense us hereafter.—The morality he taught was the purest, the soundest, the sublimest, the most perfect, that had ever

before entered into the imagination, or proceeded from the lips of man. And this he delivered in a manner the most striking and impressive; in short, sententious, solemn, important, ponderous rules and maxims, or in familiar, natural, affecting similitudes and parables. He showed also a most consummate knowledge of the human heart, and dragged to light all its artifices, subtleties, and evasions. He discovered every thought, as it arose in the mind; he detected every irregular desire, before it ripened into action. He manifested, at the same time, the most perfect impartiality. He had no respect of persons. He reproved vice in every station, wherever he found it, with the same freedom and boldness; and he added to the whole the weight—the irresistible weight—of his own example. He and he only, of all the sons of men, acted up in every the minutest instance, to what he taught; and his life exhibited a perfect portrait of his religion. But what completed the whole was, that he taught, as the Evangelist expresses it, *with authority*, with the authority of a divine teacher. The ancient philosophers could do nothing more than give good advice to their followers; they had no means of enforcing that advice: but our great Lawgiver's precepts are all divine commands. He spoke in the name of God: he called himself the Son of God. He spoke in a tone of superiority and authority, which no one before had the courage or the right to assume; and finally, he enforced every thing he taught by the most solemn and awful sanctions; by a promise of eternal felicity to those who obeyed him, and a denunciation of the most tremendous punishment to those who rejected him. These were the circumstances, which gave our blessed Lord the authority with which he spake. No wonder then that *the people were astonished at his doctrines*; and that they all declared *he spake as never man spake*. *Porteus.*

ON OUR LORD'S FAMILIAR METHOD OF INSTRUCTION.

THE manner of our Saviour's teaching was the most easy and natural that can be imagined. He generally draws his doctrine from the present occasion, and the

objects that surround him ; from the most common occurrences and occupations ; from the seasons of the year ; the service of the Jewish synagogue, or their solemnities ; from some extraordinary accidents, remarkable places or transactions, and the like. Thus upon curing a blind man, he styles himself *the light of the world*, and admonishes the Pharisees of their spiritual blindness and inexcusable obstinacy, in refusing to be cured and enlightened by him. On little children being brought to him, he recommends the innocence and humility of that state, as very proper qualities for all those, who would be true members of his church ; and, under the same figure, intimates the privileges that belong to all such. Beholding the flowers of the field and fowls of the air, he teaches his disciples to frame right and worthy notions of that Providence, which supports them, and therefore will support beings of a rank so much superior to them. Taking notice of the behaviour of people at a feast, he first gives general advice therein, to both the master and his guests, and from thence brings them to the consideration of a better entertainment, to which they were all invited, but of which few among them would be persuaded to render themselves worthy. From meat and drink he leads them to the eating of his body, and drinking of his blood, in a spiritual sense ; the being nourished with his doctrine, and partaking of his kingdom : from outward washing, to the purifying of the heart and cleansing the affections : from tasting of the fruit of the vine after the paschal supper, to the celebration of an eternal festival of freedom, rest, and happiness in another world. Those that were fishers he teaches how to catch men, and shows them how far this would resemble their former employment, in taking of all kinds both bad and good ; which were at first inseparable, but would at length be carefully distinguished from each other. Upon the appearance of summer in the trees before him, he points out the evident signs of his approaching kingdom. When the harvest comes on, he reminds them of the spiritual harvest, or the gathering of his church, admonishes them to labour diligently in that work, and add their prayers to heaven for success.

From the Jewish ceremony of fetching water on the last day of the Feast of Tabernacles, in commemoration of the miracle wrought for their forefathers in the thirsty wilderness, he introduces an offer of that true living water, which would be unto them a well springing up unto everlasting life, the gospel of immortal happiness and salvation, and the plentiful effusion of the Holy Spirit, which they that believed on him were to receive. A similar allusion also was made by him to the woman of Samaria, who came to draw water at the well of Jacob. Upon hearing of some that were killed by the fall of a tower, and others put to death by the Roman governor in the midst of their sacrifices, he guards them against all misconstruction and rash censure in such cases, and exhorts all to take due warning by these visitations. Many more instances might be given, where Christ has formed his arguments and exhortations on such things, as offered themselves to him, applying each most amply to his present purpose. By these means he improved every thing into an useful moral, made every object and event serve for a constant monitor and remembrancer of his instructions, which must thus be more easily retained, than they could be by a long train of abstract reasoning, or under any artificial arrangement of a number of particulars laid down together.

Law.

ON OUR LORD'S PARABLES.

THE mode of instruction by parables has many advantages over every other, more particularly in recommending virtue or reproving vice. In the first place, when divine and spiritual things are represented by objects well known and familiar to us, such as present themselves perpetually to our observation in the common occurrences of life, they are much more easily comprehended, especially by rude and uncultivated minds (that is, by the great bulk of mankind), than if they were proposed in their original form. In all ages of the world, there is nothing with which mankind hath been so much delighted, as with those little ficti-

tious stories, which go under the names of fables or apologues among the ancient heathens, and of parables in the sacred writings. It is found by experience, that this sort of composition is better calculated to command attention, to captivate the imagination, to affect the heart, and to make deeper and more lasting impressions on the memory, than the most ingenious and most elegant discourses, that the wit of man is capable of producing. The very obscurity, in which parables are sometimes involved, has the effect of exciting a greater degree of curiosity and interest, and of urging the mind to a more vigorous exertion of its faculties and powers, than any other mode of instruction. There is something for the understanding to work upon; and, when the concealed meaning is at length elicited, we are apt to value ourselves on the discovery as the effect of our own penetration and discernment, and, for that very reason, to pay more regard to the moral it conveys. When the mind is under the influence of strong prejudices, of violent passions, or inveterate habits; and when, under these circumstances, it becomes necessary to rectify error, to dissipate delusion, to reprove sin, and bring the offender to a sense of his danger and his guilt; there is no way in which this difficult task can be so well executed, and the painful truths, that *must* be told, so successfully insinuated into the mind, as by disguising them under the veil of a well-wrought and interesting parable. It was probably these reasons, which gave rise to so general and so ancient a custom, of conveying moral instruction under the cover of imaginary agents and fictitious events. We find traces of it in the earliest writers; and it was more peculiarly cultivated in the East, the region where religion and science first took their rise. The most ancient parables perhaps on record are those we meet with in the Old Testament. Those of Jotham, for instance—of Nathan—of the woman of Tekoah—and of Jehoshaphat. From the East, this species of composition passed into Greece and Italy, and thence into the rest of Europe; and there are two celebrated writers, one in the Greek, the other in the Roman tongue, whose fables every one is acquainted with from their earliest years. These, it

must be owned, are elegant, amusing, and, in a certain degree, moral and instructive. But they are not, in any degree, to be compared with the parables of our Blessed Lord, which infinitely excel *them*, and every other composition of that species, in many essential points.—In the first place, the fables of the ancients are many of them of a very trivial nature, or at the best contain nothing more than maxims of mere worldly wisdom and common prudence, and sometimes perhaps a little moral instruction. But the parables of our Blessed Lord relate to subjects of the very highest importance ; to the great leading principles of human conduct, to the essential duties of man, to the nature and progress of the Christian religion, to the moral government of the world, to the great distinction between vice and virtue, to the awful scenes of eternity, to the divine influences of the Holy Spirit, to the great work of our redemption, to a resurrection and a future judgment, and the distribution of rewards and punishments in a future state : and all this expressed with a dignity of sentiment, and a simplicity of language, perfectly well suited to the grandeur of the subject.—In the next place, the fables of the learned heathens, though entertaining and well composed, are in general cold and dry, and calculated more to please the understanding than to touch the heart : whereas those of our Blessed Lord are most of them in the highest degree interesting and affecting. Such, for instance, are the parable of the lost sheep, of the prodigal son, of the rich man and Lazarus, of the pharisee and publican, of the unforgiving servant, of the good Samaritan. There is nothing in all heathen antiquity to be compared to these ; nothing that speaks so forcibly to our tenderest feelings and affections, and leaves such deep and lasting impressions upon the soul.—Lastly, the Greek and Roman fables are most of them founded on improbable or impossible circumstances, and are supposed conversations between animate or inanimate beings, not endowed with the power of speech ; between birds, beasts, reptiles and trees ; a circumstance which shocks the imagination, and of course weakens the force of the instruction. Our Saviour's parables, on the contrary,

are all of them images and allusions taken from nature, and from occurrences which are most familiar to our observation and experience in common life ; and the events related are not only such, as might very probably happen, but several of them are supposed to be such as actually did : and this would have the effect of a true historical narrative, which we all know to carry much greater weight and authority with it, than the most ingenious fiction.—These circumstances give a decided superiority to our Lord's parables over the fables of the ancients ; and, if we compare them with those of the Koran, the difference is still greater. The parables of Mahomet are trifling, uninteresting, tedious, and dull : and, among other things which he has borrowed from Scripture, one is the parable of Nathan, in which he has most ingeniously contrived to destroy all its spirit, force, and beauty. *Porteus.*

ON THE EXAMPLE OF CHRIST.

It is an observation not more common than it is just, that, of all methods of moral instruction, example is the most attractive and persuasive. The finest disquisitions on the beauty and fitness of virtue, while they may convince the understanding, yet seldom reach the heart. But, in beholding deeds of virtue, or perusing the lives of great and virtuous men, generous souls burn with the lofty ambition to imitate the greatness they admire, and the goodness they love,—to place themselves in the like situations, and to act the same part, with the fond object of their admiration,—to “live o'er each scene, and be what they behold.” Hence it has been the admonition of the wise of every age to their disciples, continually to set before them some object worthy of imitation ; some great example, which may call off their souls from every thing that is base, and animate them to noble deeds. But where is such a standard of perfection to be found ? In the lives, nay, in the best deeds of the very best men, we too often find an admixture of frailty, which we readily lay hold of, in justification of our own follies and vices.

The lives, too, of those, who in the estimation of the world are accounted great, have little in them that can fall within the sphere of imitation of ordinary men. But to the Christian world there has been presented, in the person of their great leader, a perfect model, adapted to the imitation of his followers in every rank and condition. In him has been exhibited a pattern of the most exalted piety, the most active beneficence, unshaken integrity, and unsullied purity,—of universal love, combined with the strictest regard to the peculiar claims of kindred, of friendship, and of country,—of obedience to the laws even of heathen rulers, in matters not inconsistent with his allegiance to his Father,—of cheerful conviviality, without intemperance or levity,—of ready and cordial forgiveness, without tame insensibility,—of prudence and guileless simplicity,—of firmness and gentleness,—of dignity and condescension,—of rigid principle without austerity of manners,—of courage without temerity,—of equanimity amid popular applause and popular clamour,—of humility amid success and triumph, and patience in suffering and adversity,—humility without meanness, patience without stoical apathy. How well this faint outline has been filled up by the Evangelists, a minute and careful perusal of their writings alone can fully testify. Yet, in order to show that the above is not an ideal sketch of imaginary perfection, but one drawn in the closest adherence to the great original, it may be necessary to descend to a few particulars.—Our Blessed Master's PIETY to his Father is exhibited in every page of his history. We read of his regular attendance at the synagogues on the Sabbath day,—of his frequent retirement from the haunts of man, to the sequestered mountain and the lonely desert, to “commune with his God in secret prayer,”—of his habitually imploring his Father's aid, and his Father's blessing, at the commencement of every important undertaking,—and of the gratitude with which, in his moments of success, he exclaimed, “*I thank thee, O Father, that thou hast heard me.*” But, while he thus, in the strongest possible manner, impressed upon his disciples the importance of prayer, and of attendance upon the external or-

dinances of religion, his piety (as must ever be the case with all true piety) most conspicuously displayed itself in the uniform tenor of his conduct. "*Father, not my will, but thine be done,*" was the habitual language, not of his lips alone, but of his life, from the moment when the child Jesus, in the temple at Jerusalem, told his mother that he *must be about his Father's business*, to that black but eventful hour, when the Redeemer of the world, having said, "*It is finished,*" bowed his head, and gave up the ghost.—As piety to God, which our Blessed Master inculcated as *the first and great commandment*, was the ruling principle of his own life, so he no less constantly exemplified in his conduct that BENEVOLENCE to man, which he declared to be the *second commandment*, and *like unto the former*. His whole life was a series of beneficent actions. He *went about doing good*. He healed the sick and infirm, he restored the dead to their mourning relatives, he instructed the ignorant, he spake peace to the guilty soul. Nor was the kindness of his heart exhibited in acts of compassion alone. He was not less ready to *rejoice with them that rejoice*, than to *weep with them that weep*. His very first miracle he performed to promote the hilarity of a marriage-feast: and it was laid to his charge by his censorious countrymen, that he mingled more with the gayer scenes of life, than according to their notions, befitted a teacher of righteousness. His goodness, too, embraced *all* within its comprehensive grasp. He granted the petitions, not of the Jew only, but of the Samaritan, the Canaanite, the Roman. His kindness extended to all of every rank in life who were willing to receive it; the despised publican, and the most degraded outcast of society, were not beneath the notice of the Saviour of men. Injury and ingratitude were no obstacles to his love. The last miracle, that he performed before his death, was healing the wound inflicted on one of his assailants; and, among the last words that he uttered on the cross, was a fervent prayer for his murderers. But, though his love was thus comprehensive, it was not indiscriminate. His example gives no countenance to the notion, that the citizen of the world ought to be in-

sensible to the claims of nature or of country. Even when, in excruciating agony, he bore the sins of a whole world in his own body on the tree, he felt that there stood, at the foot of his cross, one, who had a particular claim on his affection ; and recommended his beloved mother to the protecting care of his favourite disciple. While all were the objects of his love, a few enjoyed his peculiar friendship. Such were Peter, James, and John ; and such, also, were the family at Bethany. When he raised the ruler's daughter and the widow's son, his heart was moved with pity ; but at the grave of his friend Lazarus, where his feelings were more strongly overpowered, *Jesus wept*. While all nations were to share his benefits, every one must have perceived that his own ungrateful country ever held a first place in his regard, and must have marked the tender manner in which he continually speaks of his native land, and, even with tears in his eyes, deploras her approaching fate.—Nor was our Lord's kindness less displayed in his *manner* of conferring benefits, than in the benefits themselves. How tenderly did he *take the little children in his arms, lay his hands upon them, and bless them !* At Nain, too, it would obviously have been more than sufficient for the purpose of testifying his divine mission, to have raised by his word the widow's son to life. Yet ere he spake the commanding word, he, with the kindest sympathy, advanced to console the bereaved parent : and no sooner was this command obeyed, than, with a grace and courtesy never to be forgotten, *he delivered him to his mother !* The manner, also, in which he conveyed *reproof*, was in general equally gentle and affectionate. Against hardened and presumptuous guilt, indeed, in whatever station he found it, he never failed loudly to raise his voice in a tone of becoming indignation. But, as the prophet had foretold of him, *he brake not the bruised reed*, nor ever resorted to harsher censures, when gentler methods were sufficient to attain his end. "*Could ye not watch with me one hour ?*" was his mild reproof to his attendants, who, in the trying hour of his agony, suffered themselves to be overpowered by sleep. On Peter, who thrice denied him in his utmost need,

he merely cast a look, penetrating indeed, but full of compassion. And even to the arch-traitor himself, whose guilt, he well knew, would soon be overtaken by the bitterest feelings of remorse, he said no more than, "*Judas, betrayest thou the Son of Man with a kiss?*"—With what PRUDENCE did our Lord conduct himself, amid all the attempts, which the Evangelists tell us, were made for the purpose of *entangling him in his talk*. Witness his answers to the questions, "*Master, which is the great commandment of the law?*" and, "*Is it lawful to give tribute unto Cæsar or not?*" In the case, too, of the wretched woman, who was brought before him, charged with a heinous offence, which the law of Moses visited with death, how well did he contrive to exercise his clemency, without assuming any interference with the administration of the laws of his country, by putting home to her accusers the paralyzing observation, "*He that is without sin amongst you, let him first cast a stone at her.*" The like prudence he displayed in other parts of his conduct. Neither with the wild reliance of the enthusiast on unnecessary supernatural aid, nor for the sake of making an idle display of his own courage, did he ever expose himself to any danger uncalled for by the voice of duty. On the contrary, we hear of him on many occasions escaping for the preservation of his useful life. But, wherever he was placed in such circumstances as called upon him to risk that life, in the service either of God or of man, then he showed forth all that genuine COURAGE, which forms so prominent a part of his exemplary character. Of this it may suffice to give one striking illustration. In consequence of the attempts made upon his life, he had, on a certain occasion, been obliged to quit Judea. But no sooner did he hear of the death of Lazarus, than, in face of the earnest solicitations of his more intimate Apostles, he forthwith returned to the scene of danger, from which he had so recently fled, but which the claims of friendship had now rendered also the scene of duty. His prudence, unlike the temporizing wisdom of the world, had no tincture either of servile flattery or of low cunning; he neither fawned upon the great,

nor basely ministered to the passions of the multitude.—What noble DIGNITY did he display in his whole deportment, inculcating his doctrines *as one having authority*, rebuking pride and hypocrisy in the lofty tone of conscious superiority, pronouncing pardon as one who alone *had power on earth to forgive sins*—but never in a more striking manner exhibiting true dignity, than when the Judge of all the earth stood, as an arraigned culprit, at the bar of his own feeble creature. The cries of “*Crucify him! Crucify him!*” as little shook his firm and determined soul, as the previous hosannahs of the same fickle multitude, or their vain attempts to make him a king. Through the whole of the trying scene of his sufferings, what resignation did he display, what patience, what forbearance, what fortitude, what heroic magnanimity! But, while he thus acted in a manner worthy of the SON OF GOD, he showed at the same time that he felt as the SON OF MAN. He pretended to none of that insensibility to pain and suffering, so inconsistent with our nature, which has been the idle talk of philosophers. He submitted because duty demanded, and not because what he was called to endure was to him a matter of indifference. *Father*, he said, *if it be possible let this cup pass from me; nevertheless, not my will, but thine be done.* But why need we longer dwell upon a subject, which has furnished a theme of glowing panegyric to the sceptic, no less than to the firm believer? “Where,” says Rousseau, “is the man, where is the philosopher, who can act, suffer, and die, without weakness, and without ostentation? What prejudice, what blindness must possess the mind of that man, who dares to compare the son of Sophroniscus with the Son of Mary! What a distance is there between the one and the other! Yes, if the life and death of Socrates are those of a sage, the life and death of Jesus are those of a God.”—We shall now only say a few words regarding the UNIVERSALITY of Christ’s example, or its adaptation to all classes and conditions of men. The *young* will receive from it the most striking pattern of filial reverence and submission, that ever was exhibited to the world. Not only when arrived at an age, at which self-conceit and undue notions of our

own abilities and knowledge are too apt to take possession of the place, so lately and so salutarily occupied by respect for parental authority,—but at the very moment when he had displayed his own transcendent powers and wisdom, in profound discussions with the men of greatest learning and experience in his land,—Jesus modestly returned from the temple at Jerusalem, with his mother and her husband, to their humble abode at Nazareth, where he spent the remainder of his youthful days in a state of the most dutiful submission. If there be any young person, who, from superior education, or other advantage real or imaginary, thinks himself absolved from the ordinary obligation of reverence for his parents, or other guardians of his helpless years, let him look upon this bright example of the Son of God, blush for his own arrogance and folly, and, ere it be too late, retrace his erring steps. And let it be the constant study of all, in their opening years, to acquire that progressive knowledge and goodness, which was exhibited in the early life of him, who *increased in wisdom and stature, and in favour with God and man*. Where, too, can *manhood* better learn a lesson of active virtue, than from *Jesus of Nazareth, who went about doing good*—who was prompt at every call of duty and compassion,—brought every power and faculty into strenuous exertion—spared no labour, and shrunk from no difficulty or hazard, by which he might promote the glory of God, or the benefit of man? Even *old age* may find in Jesus an example well adapted to its own condition. For, though he never attained this last stage of life, he had long before him, in awful perspective, the cross, with all its appalling horrors, and ever spake of that approaching event, with a calmness, composure, and submissive resignation, well worthy the imitation of those, whose declining years forewarn them that the dread hour, which to all is ever on the wing, to them is near at hand. From the example of the Son of God, the *great* and the *powerful* may learn the due employment of the advantages which they possess, in promoting the glory of God, the encouragement of modest merit, the diffusion of knowledge, the relief of distress, the suppression of crime. They may learn to be great without

being proud, wise without being arrogant, beneficent without being ostentatious. From the example of the Son of Man, who *had not where to lay his head*, the poor man may learn unenvying contentment with the lot which Providence hath assigned him, uncomplaining resignation amidst the most painful sufferings and hardships, inflexible integrity amidst the severest trials, and to maintain a temper unruffled and serene even amid contumely and scorn. In a word, let all of us keep the example of our Blessed Master continually before us. Let it be our constant endeavour, that *the same mind may be in us, which was also in Christ Jesus ; who suffered for us, leaving us an example that we should follow his steps.*

Original.

ON THE DEATH AND SACRIFICE OF CHRIST.

FATHER! the hour is come. What hour? An hour the most critical, the most pregnant with great events, since hours had begun to be numbered, since time had begun to run. It was the hour, in which the Son of God was to terminate the labours of his important life by a death still more important and illustrious ; the hour of atoning, by his sufferings, for the guilt of mankind ; the hour of accomplishing prophecies, types, and symbols, which had been carried on through a series of ages : the hour of concluding the old, and of introducing to the world the new dispensation of religion : the hour of his triumphing over the world, and death, and hell ; the hour of his erecting that spiritual kingdom, which is to last for ever.—This was the hour, in which Christ atoned for the sins of mankind, and accomplished our eternal redemption. It was the hour, when that great sacrifice was offered up, the efficacy of which reaches back to the first transgression of man, and extends forward to the end of time : the hour when, from the cross, as from an high altar, that blood was flowing which washed away the guilt of the nations. This awful dispensation of the Almighty contains mys-

teries which are beyond the discovery of man. It is one of those things, into which *the angels desire to look*. What has been revealed to us is, That the death of Christ was the interposition of heaven for preventing the ruin of human kind. We know, that under the government of God, misery is the natural consequence of guilt. After rational creatures had, by their criminal conduct, introduced disorder into the Divine kingdom, there was no ground to believe that, by their penitence and prayers alone, they could prevent the destruction which threatened them. The prevalence of propitiatory sacrifices, throughout the earth, proclaims it to be the general sense of mankind, that mere repentance was not of sufficient avail to expiate sin, or to stop its penal effects. By the constant allusions, which are carried on, in the New Testament, to the sacrifices under the Law, as presignifying a great atonement made by Christ, and by the strong expressions, which are used in describing the effects of his death, the sacred writers show, as plainly as language allows, that there was an efficacy in his sufferings far beyond that of mere example and instruction. Part we are capable of beholding; and the wisdom of what we behold we have reason to adore. We discern in this plan of Redemption, the evil of sin strongly exhibited, and the justice of the Divine government awfully exemplified, in Christ suffering for sinners. But let us not imagine, that our present discoveries unfold the whole influence of the death of Christ. It is connected with causes, into which we cannot penetrate. It produces consequences too extensive for us to explore. *God's thoughts are not as our thoughts*. In all things we see only *in part*; and here, if any where, we see only *as through a glass darkly*. This, however, is fully manifest, that Redemption is one of the most glorious works of the Almighty. If the hour of the creation of the world was great and illustrious, that hour, when, from the dark and formless mass, this fair system of nature arose at the Divine command, when *the morning stars sang together, and all the sons of God shouted for joy*; no less illustrious is the hour of the restoration of the world, the hour when, from condemnation and misery, it emerged into happi-

ness and peace. With less external majesty it was attended ; but is, on that account, the more wonderful, that, under an appearance so simple, such great events were covered.

Blair.

It is finished! Holy victim, thy sufferings are finished ! All is finished, that wicked men were wonderfully destined to contribute towards the general deliverance : what remains, infinite power and infinite mercy shall accomplish. The disciples,—those few of them who had the courage to be present at this dismal scene,—hung their heads in sorrowful despondency, and seemed to have abandoned the hope, that *this was he who should redeem Israel*. But Israel is redeemed. The high sacrifice, appointed before the foundation of the world, typified in all the sacrifices of the law, is now slain, and is accepted. That Jesus, who, according to his own prediction, hath expired on the cross, shall, according to his own prediction, be raised again on the third day. He is raised. He is entered into glory. He is sitten down for ever at the right hand of the Majesty on high. There he pleads the merits of his blood, in behalf of those crying sins, that caused it to be shed. Nor does he plead in vain. The final judgment is committed to him ; and the greatest of sinners, that will but forsake their evil ways, have no reason to fear the severity of a Judge, who hath himself been *touched with the feeling of our infirmities*. On the other hand, let not any deceive themselves with a vain reliance on his merits, who, after all that the Son of God hath done and suffered for them, remain impenitent. The sacrifice of the cross was no less a display of the just severity, than of the tender mercy of God. The authority of his government must be maintained. This rendered intercession and atonement necessary for the pardon of sin. For those, who neglect *so great salvation*, who cannot be reclaimed by the promises and threatenings of the gospel, by the warnings of God's wrath, by the assurance of mercy, by the contemplation of their Saviour's love,—for those, who cannot be reclaimed by these powerful motives from

obstinate courses of wilful vice, there assuredly *remaineth no more sacrifice for sin, but a certain fearful looking for of fiery indignation*, which, at the last day, shall burn with unextinguishable rage, against those incorrigible adversaries of God and goodness.

Horsley.

ON THE CONSOLATIONS OF RELIGION.

WHAT is it, O child of sorrow, what is it that now wrings thy heart, and bends thee in sadness to the ground? Whatever it be, if thou knowest the truth, the truth shall give thee relief. Have the terrors of guilt taken hold of thee? Dost thou go all the day long mourning for thy iniquities, refusing to be comforted? And, on thy bed at night, do visions of remorse disturb thy rest, and haunt thee with the fears of a judgment to come? Behold! The Redeemer hath borne thy sins in his own body on the tree; and, if thou art willing to forsake them, thou knowest with certainty, that they shall not be remembered in the judgment against thee. Hast thou, with weeping eyes, committed to the grave the child of thy affections, the virtuous friend of thy youth, or the tender partner, whose pious attachment lightened to thee the load of life? Behold! They are not dead. Thou knowest that they live in a better region, with their Saviour and their God; that still thou holdest thy place in their remembrance; and that thou shalt soon meet them again to part no more. Dost thou look forward with trembling to the days of darkness, that are to fall on thyself, when thou shalt lie on the bed of sickness, when thy pulse shall have become low, when the cold damps have gathered on thy brow, and the mournful looks of thy attendants have told thee, that the hour of thy departure has come? To the mere natural man this scene is awful and alarming. But, if thou art a Christian, if thou knowest and obeyest the truth, thou needest fear no evil. The shadows, which hung over the valley of death, shall retire at thy approach: and thou shalt see, beyond it, the spirits of the just, and an innumerable company of angels, the future companions

of thy bliss, bending from their thrones, to cheer the departing soul, and to welcome thee into everlasting habitations. Why, then, my Christian Brother, why should slavish terrors of the future disquiet thy soul, in the days of this vain life, which passeth away like a shadow? The Gospel hath not given thee the spirit of fear, but of confidence and joy. Even now there is no condemnation to them, who are in Christ Jesus, who walk not after the flesh but after the Spirit; and, when they die (a voice from heaven hath proclaimed it), *Blessed are the dead which die in the Lord, from henceforth; yea, saith the Spirit, that they may rest from their labour, and their works do follow them.*

Finlayson.

SECTION II.

NATURAL HISTORY.

ON THE EARTH, AS ADAPTED TO THE NATURE OF MAN.

IF we consider the earth as allotted for our habitation, we shall find that much has been given us to enjoy, and much has been left us to improve; that we have ample ground for gratitude, and no less for industry. In those great outlines of nature, to which art cannot reach, and where our greatest efforts must have been ineffectual, God himself has finished these with amazing grandeur and beauty. Our beneficent Father has considered those parts of nature as peculiarly his own, as parts which no creature could have skill or strength to amend, and therefore made them incapable of alteration, or of more perfect regularity. The heavens and the firmament show the wisdom and the glory of the Workman. Astronomers, who are best skilled in the symmetry of systems, can find nothing there that

they can alter for the better. God made these perfect because no subordinate being could correct their defects. When, therefore, we survey nature on this side, nothing can be more splendid, more correct, or more amazing. We there behold a Deity, residing in the midst of an universe infinitely extended every way, animating all, and cheering the vacuity with his presence. We behold an immense and shapeless mass of matter, formed into worlds by his power, and dispersed at intervals, to which even the imagination cannot travel. In this great theatre of his glory, a thousand suns, like our own, animate their respective systems, appearing and vanishing at Divine command. We behold our own bright luminary fixed in the centre of its system, wheeling its planets in times proportioned to their distances, and at once dispensing light, heat, and action. The earth, also, is seen with its twofold motion, producing by the one the change of seasons, and by the other the grateful vicissitudes of day and night. With what silent magnificence is all this performed! with what seeming ease! The works of art are exerted with interrupted force, and their noisy progress discovers the obstructions they receive; but the earth, with a silent steady rotation, successively presents every part of its bosom to the sun, at once imbibing nourishment and light from that parent of vegetation and fertility. But not only provisions of heat and light are thus supplied, but its whole surface is covered with a transparent atmosphere, that turns with its motion, and guards it from external injury. The rays of the sun are thus broken into a genial warmth; and while the surface is assisted, a gentle heat is produced in the bowels of the earth, which contributes to cover it with verdure. Water also is supplied in healthful abundance, to support life and assist vegetation. Mountains arise to diversify the prospect, and give a current to the stream. Seas extend from one continent to the other, replenished with animals, that may be turned to human support; and also serving to enrich the earth with a sufficiency of vapour. Breezes fly along the surface of the fields, to promote health and vegetation. The coolness of the evening invites to rest, and the freshness of the morn-

ing renews for labour. Such are the delights of the habitation, that is assigned to man. Without any one of these he must have been wretched, and none of these could his own industry have supplied. But, while many of his wants are thus kindly furnished on the one hand, there are numberless inconveniences to excite his industry on the other. This habitation, though provided with all the conveniences of air, pasturage, and water, is but a desert place without human cultivation. The lowest animal finds more conveniences in the wilds of nature, than he who boasts himself their lord. The earth itself, where human art has not pervaded, puts on a frightful gloomy appearance. The forests are dark and tangled; the meadows overgrown with rank weeds; and the brooks stray without a determined channel. To the savage uncontriving man, the earth is an abode of desolation, where his shelter is insufficient, and his food precarious. A world, thus furnished with advantages on one side, and inconveniences on the other, is the proper abode of reason, is the fittest to exercise the industry of a free and a thinking creature. Those evils, which art can remedy, and prescience guard against, are a proper call for the exertion of his faculties. God beholds with pleasure that being, which he has made, converting the wretchedness of his natural situation into a theatre of triumph; bringing all the tribes of nature into subjection to his will; and producing that order and uniformity upon earth, of which his own heavenly fabric is so bright an example. *Goldsmith.*

ON THE ADAPTATION OF ANIMALS TO THEIR RESPECTIVE CONDITIONS.

ALTHOUGH the variety of quadrupeds is great, they all seem well adapted to the stations in which they are placed. There is scarcely one of them, how rudely shaped soever, that is not formed to enjoy a happiness fitted to its nature. All its deformities are only relative to us, but all its enjoyments are peculiarly its own. We may suppose the sloth, that takes up months in climbing a single tree, or the mole, whose eyes are too

small for distinct vision, are wretched and helpless creatures; but it is probable, that their life, with respect to themselves, is a life of luxury. The most pleasing food is easily obtained, and, as they are abridged in one pleasure, it may be doubled in those which remain. Quadrupeds, and all the lower kinds of animals, have, at worst, but the torments of immediate evil to encounter, and this is but transient and accidental: man has two sources of calamity, that which he foresees, as well as that which he feels; so that, if his rewards were to be in this life alone, then indeed would he be of all beings the most wretched.—The heads of quadrupeds, though differing from each other, are in general adapted to their way of living. In some it is sharp, the better to fit the animal for turning up the earth, in which its food lies. In some it is long, in order to give a greater room for the olfactory nerves, as in dogs, who are to hunt and find out their prey by the scent. In others it is short and thick, as in the lion, to increase the strength of the jaw, and to fit it the better for combat. In quadrupeds that feed upon grass, they are enabled to hold down their heads to the ground by a strong tendinous ligament, that runs from the head to the middle of the back. This serves to raise the head, although it has been held to the ground for several hours, without any labour or any assistance from the muscles of the neck.—The teeth of all animals are entirely fitted to the nature of their food. Those of such as live upon flesh, differ in every respect from such as live upon vegetables.—Their legs are not less fitted, than their teeth, to their respective wants or enjoyments. In some they are made for strength only, and to support a vast unwieldy frame, without much flexibility or beautiful proportion. Thus the legs of the elephant, the rhinoceros, and the sea-horse, resemble pillars. Were they made smaller, they would be unfit to support the body; were they endowed with greater flexibility or swiftness, it would be useless, as they do not pursue other animals for food, and, conscious of their own superior strength, there are none that they deign to avoid. Deer, hares, and other creatures that are to find safety only in flight, have their legs made entirely for speed: they are slen-

der and nervous. Were it not for this advantage, every carnivorous animal would soon make them a prey, and their races would be entirely extinguished. But, in the present state of nature, the means of safety are rather superior to those of offence: and the pursuing animal must owe success only to patience, perseverance, and industry.—The feet of some that live upon fish are made for swimming. The toes of those animals are joined together with membranes, being web-footed like a goose or a duck, by which they swim with great rapidity. Those animals that lead a life of hostility, and live upon others, have their feet armed with sharp claws, which some can sheath and unsheath at will. Those, on the contrary, who lead peaceable lives, have generally hoofs, which serve some as weapons of defence, and which, in all, are better fitted for traversing extensive tracts of rugged country, than the claw-foot of their pursuers.—The stomach also is generally proportioned to the quality of the animal's food, or the ease with which it is obtained. In those that live upon flesh and such nourishing substances, it is small, affording such juices, as are best adapted to digest its contents. On the contrary, such animals, as feed entirely upon vegetables, have the stomach very large. Those who chew the cud, have no less than four stomachs, all which serve as so many laboratories, to prepare and turn their coarse food into proper nourishment. In Africa, where the plants afford greater nourishment than in our temperate climate, several animals, that with us have four stomachs, have there but two. *Goldsmith.*

ON THE ADAPTATION OF ANIMALS TO THEIR RESPECTIVE CONDITIONS—CONTINUED.

ALL animals are fitted by nature to fill up some peculiar station. The greatest animals are made for inoffensive life, to range the plains and the forest without injuring others: to live upon the productions of the earth, the grass of the fields, or the tender branches of trees. These, secure in their own strength, neither fly from any other quadrupeds, nor yet attack them. Na-

ture, to the greatest strength, has added the most gentle and harmless dispositions. Without this, these enormous creatures would be more than a match for all the rest of the creation; for, what devastation might not ensue, were the elephant, or the rhinoceros, or the buffalo, as fierce and as mischievous as the tiger or the rat? In order to oppose these large animals, and, in some measure to prevent their exuberance, there is a species of the carnivorous kind, of inferior strength indeed, but of greater activity and cunning. The lion and the tiger generally watch for the larger kinds of prey, attack them at some disadvantage, and commonly jump upon them by surprise. None of the carnivorous kinds, except the dog alone, will make a voluntary attack, but with the odds on their side. They are all cowards by nature, and usually catch their prey by a bound from some lurking-place, seldom attempting to invade them openly; for the larger beasts are too powerful for them, and the smaller too swift.—A lion does not willingly attack a horse, and then only when compelled by the keenest hunger. The combats between the lion and horse are frequent enough in Italy, where they are both enclosed in a kind of amphitheatre fitted for that purpose. The lion always approaches wheeling about, while the horse presents his hinder legs to the enemy. The lion, in this manner, goes round and round, still narrowing his circle, till he comes to the proper distance to make his spring. Just at the time the lion springs, the horse lashes with both legs from behind, and, in general, the odds are in his favour; it more often happening, that the lion is stunned and struck motionless by the blow, than that he effects his jump between the horse's shoulders. If the lion is stunned, and left sprawling, the horse escapes, without attempting to improve his victory: but if the lion succeeds, he sticks to his prey, and tears the horse in pieces in a very short time.—But it is not among the larger animals of the forest alone, that these hostilities are carried on. There is a minuter and a still more treacherous contest between the lower ranks of quadrupeds. The panther hunts for the sheep and the goat; the catamountain for the hare or the rabbit; and the

wild cat for the squirrel or the mouse. In proportion as each carnivorous animal wants strength, it uses all the assistance of patience, assiduity, and cunning. However, the arts of these to pursue are not so great, as the tricks of their prey to escape ; so that the power of destruction in one class is inferior to the power of safety in the other. Were this otherwise, the forest would soon be dispeopled of the feebler races of animals, and beasts of prey themselves would want at one time that subsistence, which they lavishly destroyed at another.— Few wild animals seek their prey in the day-time : they are then generally deterred by their fears of man in the inhabited countries, and by the excessive heat of the sun in those extensive forests, that lie towards the south, and in which they reign the undisputed tyrants. As soon as the morning, therefore, appears, the carnivorous animals retire to their dens ; and the elephant, the horse, the deer, and all the hare kinds, those inoffensive tenants of the plain, make their appearance. But again at night-fall the state of hostility begins : the whole forest then echoes to a variety of different howlings. Nothing can be more terrible than an African landscape at the close of evening : the deep-toned roarings of the lion ; the shriller yellings of the tiger ; the jackal pursuing by the scent, and barking like a dog ; the hyena, with a note peculiarly solitary and dreadful ; but, above all, the hissing of the various kinds of serpents, that then begin their call, and, as I am assured, make a much louder symphony, than the birds in our groves in a morning.—Beasts of prey seldom devour each other ; nor can any thing, but the greatest degree of hunger, induce them to it. What they chiefly seek after is the deer or the goat, those harmless creatures, that seem made to embellish nature. These are either pursued or surprised, and afford the most agreeable repast to their destroyers. The most usual method, even with the fiercest animals, is to hide and crouch near some path frequented by their prey, or some water where cattle come to drink, and seize them at once with a bound. The lion and the tiger leap twenty feet at a spring ; and this, rather than their swiftness or strength, is what they have most to depend

upon for a supply. There is scarcely one of the deer or hare kind, that is not very easily capable of escaping them by its swiftness ; so that, whenever any of these fall a prey, it must be owing to their own inattention. But there is another class of the carnivorous kind, that hunt by the scent, and which it is much more difficult to escape. It is remarkable that all animals of this kind pursue in a pack, and encourage each other by their mutual cries. The jackal, the syagush, the wolf, and the dog, are of this kind ; they pursue with patience rather than swiftness : their prey flies at first and leaves them behind ; but they keep on with a constant steady pace, and excite each other by a general spirit of industry and emulation, till at last they share the common plunder. But it too often happens, that the larger beasts of prey, when they hear a cry of this kind begun, pursue the pack, and, when they have hunted down the animal, come in and monopolize the spoil. This has given rise to the report of the jackal's being the lion's provider, while the reality is, that the jackal hunts for himself, and the lion is an unwelcome intruder upon the fruits of his toil.—Of the prey of these carnivorous animals, some find protection in holes, in which nature has directed them to bury themselves ; some find safety by swiftness ; and such, as are possessed of neither of these advantages, generally herd together, and endeavour to repel invasion by united force. The very sheep, which to us seem so defenceless, are by no means so in a state of nature. They are furnished with arms of defence, and a very great degree of swiftness. But they are still further assisted by their spirit of mutual defence : the females fall into the centre ; and the males, forming a ring round them, oppose their horns to the assailants.—Some animals, that feed upon fruits, which are to be found only at one time of the year, fill their holes with several sorts of plants, which enable them to be concealed during the hard frosts of the winter, contented with their prison, since it affords them plenty and protection. These holes are dug with so much art, that there seems the design of an architect in the formation. There are usually two apertures, by one of which the

little inhabitants can always escape, when the enemy is in possession of the other. Many creatures are equally careful of avoiding their enemies, by placing a sentinel to warn them of the approach of danger. These generally perform this duty by turns: and they know how to punish such, as have neglected their post, or have been unmindful of the common safety. Such are a part of the efforts, that the weaker races of quadrupeds exert, to avoid their invaders; and, in general, they are attended with success. The arts of instinct are most commonly found an overmatch for the invasions of instinct. Man is the only creature, against whom all their little arts cannot prevail. Wherever he has spread his dominion, scarcely any flight can save, or any retreat harbour. Wherever he comes, terror seems to follow, and all society ceases among the inferior tenants of the plain. Their union against him can yield them no protection, and their cunning is but weakness. In their fellow-brutes they have an enemy, whom they can oppose with an equality of advantage. They can oppose fraud or swiftness to force, or numbers to invasion; but what can be done against such an enemy as man, who finds them out though unseen, and though remote destroys them? Wherever he comes, all the contest among the meaner ranks seems to be at an end, or is carried on only by surprise. Such as he has thought proper to protect, have calmly submitted to his protection; such as he has found convenient to destroy, carry on an unequal war, and their numbers are every day decreasing. *Goldsmith.*

ON THE DIFFERENCE BETWEEN ANIMALS IN THEIR
WILD AND TAME STATE.

THE wild animal is subject to few alterations, and, in a state of savage nature, continues for ages the same, in size, shape, and colour. But it is otherwise when subdued, and taken under the protection of man. Its external form, and even its internal structure, are altered by human assiduity; and this is one of the first and greatest causes of the variety, that we see among

the several quadrupeds of the same species. Man appears to have changed the very nature of domestic animals by cultivation and care. A domestic animal is a slave, that seems to have few other desires, but such as man is willing to allow it. Humble, patient, resigned, and attentive, it fills up the duties of its station ; ready for labour, and content with subsistence. Almost all domestic animals seem to bear the marks of servitude strong upon them. All the varieties in their colour, all the fineness and length of their hair, together with the depending length of their ears, seem to have arisen from a long continuance of domestic slavery. What an immense variety is there to be found in the ordinary race of dogs and horses ? the principal differences of which have been effected by the industry of man, as adapting the food, the treatment, the labour, and the climate ; that nature seems almost to have forgotten her original design, and the tame animal no longer bears any resemblance to its ancestors in the woods around him. In this manner, nature is under a kind of constraint in those animals we have taught to live in a state of servitude near us. The savage animals preserve the marks of their first formation. Their colours are generally the same ; a rough dusky brown, or a tawny, seem almost the only varieties. But it is otherwise in the tame ; their colours are various, and their forms different from each other. The nature of the climate, indeed, operates upon all, but more particularly upon these. The nourishment, which is prepared by the hand of man, not adapted to their appetites, but to suit his own convenience, that climate, the rigour of which he can soften, and that employment, to which they are sometimes assigned, produce a number of distinctions, that are not to be found among the savage animals. These at first were accidental, but in time became hereditary ; and a new race of artificial monsters are propagated, rather to answer the purposes of human pleasure, than their own convenience. In short, their very appetites may be changed, and those that feed only upon grass may be rendered carnivorous. I have seen a sheep that would eat flesh, and a horse that was fond of oysters. But not their appetites, or their figure alone, but their very dispositions, and their

natural sagacity, are altered by the vicinity of man. In those countries where men have seldom visited, some animals have been found established in a kind of civil state of society. Remote from the tyranny of man, they seem to have a spirit of mutual benevolence and mutual friendship. The beavers, in those distant solitudes, are known to build like architects, and rule like citizens. The habitations, that these have been seen to erect, exceed the houses of the human inhabitants of the same countries, both in neatness and convenience. But, as soon as man intrudes upon their society, they seem impressed with the terrors of their inferior situation; their spirit of society ceases; and every animal looks for safety in solitude, and there tries all its little industry to shift only for itself.

Goldsmith.

ON THE MOUTHS OF ANIMALS.

IN comparing different animals, I know no part of their structure, which exhibits greater variety, or, in that variety, a nicer accommodation to their respective conveniency, than that which is seen in the different formations of their *mouths*. Whether the purpose be the reception of aliment merely, or the catching of prey, the picking up of seeds, the cropping of herbage, the extraction of juices, the suction of liquids, the breaking and grinding of food, the taste of that food, together with the respiration of air, and in conjunction with it, the utterance of sound; these various offices are assigned to this one part, and in different species, provided for, as they are wanted, by its different constitution. In the human species, forasmuch as there are hands to convey the food to the mouth, the mouth is flat, and, by reason of its flatness, fitted only for *reception*: whereas the projecting jaws, the wide *ricтус* or gape, the pointed teeth, of the dog and his affinities, enable them to apply their mouths to *snatch and seize* the objects of their pursuit. The full lips, the rough tongue, the peculiar palate, the broad cutting teeth of the ox, the deer, the horse, and the sheep, qualify this tribe for *browsing* upon their pasture; either gathering

large mouthfuls at once, where the grass is long, which is the case with the ox in particular ; or biting close, where it is short, which the horse and the sheep are able to do, in a degree that one could hardly expect. The retired under-jaw of a swine *works in the ground*, after the protruding snout, like a prong or ploughshare, has made its way to the roots upon which it feeds. A conformation so happy was not the gift of chance.—In *birds* this organ assumes a new character ; new both in substance and in form ; but, in both, wonderfully adapted to the wants and uses of a distinct mode of existence. We have no longer the fleshy lips, the teeth of enamelled bone : but we have, in the place of these two parts, and to perform the office of both, a hard substance, of the same nature with that which composes the nails, claws, and hoofs of quadrupeds, cut out into proper shapes, and mechanically suited to the actions which are wanted. The sharp edge and tempered point of the *sparrow's bill* picks almost every kind of seed from its concealment in the plant ; and not only so, but hulls the grain, breaks and shatters the coats of the seed, in order to get at the kernel. The *hooked beak* of the hawk tribe separates the flesh from the bones of the animals which it feeds upon, almost with the cleanness and precision of a dissector's knife. The butcher-bird transfixes its prey upon the spike of a thorn, whilst it picks its bones. In some birds of this class we have the *cross-bill*, that is, both the upper and lower bill hooked, and their tips crossing. The *spoon-bill* enables the goose to graze, to collect its food from the bottom of pools, or to seek it amidst the soft or liquid substances with which it is mixed. The *long tapering bill* of the snipe and woodcock penetrates still deeper into moist earth, which is the bed in which the food of that species is lodged. This is exactly the instrument, which the animal wanted. It did not want strength in its bill, which was inconsistent with the slender form of the animal's neck, as well as unnecessary for the kind of aliment, upon which it subsists : but it wanted length to reach its object. Birds that live by suction have what are called by naturalists *serrated* or *dentated bills*, the inside of which, towards the edge, is thickly

set with parallel or concentric rows of short, strong, sharp-pointed prickles. These prickles, though called teeth, are not for the purpose of mastication, like the teeth of quadrupeds: nor yet, as in fish, for the seizing and retaining of their prey, but for a quite different use. They form a filter. The duck, by means of them, discusses the mud, examining with great care the puddle. They break every mixture, which is likely to contain her food.—If we had seen no other than the mouths of quadrupeds, we should have thought no other could have been formed. Little could we have supposed, that all the purposes of a mouth furnished with lips, and armed with teeth, could be answered by an instrument which had none of these—could be supplied, and that with many additional advantages, by the hardness, and sharpness, and figure of the bills of birds. Every thing about the animal mouth is mechanical. The teeth of fish have their points turned backward, like the teeth of a wool or cotton card. The teeth of lobsters work one against another, like the sides of a pair of shears. In many insects the mouth is converted into a pump or sucker, fitted at the end sometimes with a wimble, sometimes with a forceps; by which double provision, viz. of the tube and the penetrating form of the point, the insect first bores through the integument of its prey, and then extracts the juices. And, what is most extraordinary of all, one sort of mouth, as the occasion requires, shall be changed into another sort. The caterpillar could not live without teeth; in several species, the butterfly formed from it could not use them. The old teeth, therefore, are cast off with the exuviae of the grub; a new and totally different apparatus assumes their place in the fly. Amid these novelties of form, we sometimes forget that it is, all the while, the animal's *mouth*; that, whether it be lips, or teeth, or bill, or beak, or shears, or pump, it is the same part diversified; and it is also remarkable that, under all the varieties of configuration with which we are acquainted, and which are very great, the organs of taste and smelling are situated near each other.

Paley.

ON THE HUMAN TEETH AS INDICATIVE OF PROSPECTIVE CONTRIVANCE.

I CAN hardly imagine to myself a more distinguishing mark, and consequently a more certain proof, of design, than *preparation*; that is, the providing of things beforehand, which are not to be used until a considerable time afterwards: for this implies a contemplation of the future, which belongs only to intelligence. Of these prospective contrivances the bodies of animals furnish various examples. The *human teeth* afford an instance, not only of prospective contrivance, but of the completion of the contrivance being designedly suspended. They are formed within the gums, and there they stop; the fact being, that their farther advance to maturity would not only be useless to the new-born animal, but extremely in its way; as it is evident that the act of sucking, by which it is for some time to be nourished, will be performed with more ease, both to the nurse and to the infant, whilst the inside of the mouth and edges of the gums are smooth and soft, than if set with hard pointed bones. By the time they are wanted the teeth are ready. They have been lodged within the gums for some months past, but detained, as it were, in their socket, so long as their further protrusion would interfere with the office, to which the mouth is destined. Nature, namely that intelligence which was employed in creation, looked beyond the first year of the infant's life; yet, while she was providing for functions, which were after that term to become necessary, was careful not to incommode those which preceded them. What renders it more probable, that this is the effect of design, is, that the teeth are imperfect, whilst all the other parts of the mouth are perfect. The lips are perfect; the tongue is perfect; the cheeks, the jaws, the palate, are all perfect;—the teeth alone are not so. This is the fact with regard to the human mouth. The fact also is, that the parts above enumerated are called into use from the beginning, whereas the teeth would be only so many obstacles and annoyances, if they were there.

When a contrary order is necessary, a contrary order prevails. In the worm of the beetle, as hatched from the egg, the teeth are the first things, which arrive at perfection. The insect begins to gnaw as soon as it escapes from the shell, though its other parts be only gradually advancing to their maturity. What has been observed of the teeth is true of the horns of animals, and for the same reason. The horn of a calf or a lamb does not bud, or at least does not sprout to any considerable length, until the animal be capable of browsing upon its pasture; because such a substance, upon the forehead of the young animal, would very much incommodate the dam in the office of giving suck. But, in the case of the teeth—of the human teeth at least—the prospective contrivance looks still further. A succession of crops is provided, and provided from the beginning; a second tier being originally formed beneath the first, which do not come into use till several years afterwards. And this double or suppletory provision meets a difficulty in the mechanism of the mouth, which would have appeared almost insurmountable. The expansion of the jaw (the consequence of the proportional growth of the animal and of its skull), necessarily separates the teeth of the first set, however compactly disposed, to a distance from one another, which would be very inconvenient. In due time, therefore, that is, when the jaw has obtained a great part of its dimensions, a new set of teeth springs up, loosening and pushing out the old ones before them, more exactly fitted to the space which they are to occupy, and rising also in such close ranks, as to allow for any extension of line, which the subsequent enlargement of the head may occasion.

Paley.

ON THE HAPPINESS OF ANIMAL LIFE.

It is a happy world after all. The air, the earth, the water, teem with delighted existence. In a spring noon or a summer evening, on whichever side I turn my eyes, myriads of happy beings crowd upon my view. "The insect youth are on the wing. Swarms of new-born flies are trying their pinions in the air. Their

sportive motions, their wanton mazes, their gratuitous activity, their continual change of place without use or purpose, testify their joy, and the exultation which they feel in their lately-discovered faculties. A bee, amongst the flowers in spring, is one of the most cheerful objects that can be looked upon. Its life appears to be all enjoyment ; so busy and so pleased : yet it is only a specimen of insect life, with which, by reason of the animal being half domesticated, we are better acquainted, than with that of others. The whole winged insect tribe, it is probable, are equally intent upon their proper employments, and, under every variety of constitution, gratified, and perhaps equally gratified, by the offices, which the Author of their nature has assigned to them. But the atmosphere is not the only scene of enjoyment for the insect race. Plants are covered with aphides, greedily sucking their juices, and constantly, as it should seem, in the act of sucking. It cannot be doubted but that this is a state of gratification. What else should fix them so close to the operation and so long ? Other species are running about with an alacrity in their motions, which carries with it every mark of pleasure. Large patches of ground are sometimes half covered with these brisk and sprightly creatures. If we look to what the waters produce, shoals of the fry of fish frequent the margins of rivers, of lakes, and of the sea itself. They are so happy, that they know not what to do with themselves. Their attitudes, their vivacity, their leaps out of the water, their frolics in it, which I have noticed a thousand times with equal attention and amusement, all conduce to show their excess of spirits, and are simply the effects of that excess. Walking by the seaside in a calm evening, upon a sandy shore, and with an ebbing tide, I have frequently remarked the appearance of a dark cloud, or rather very thick mist, hanging over the edge of the water, to the height perhaps of half a yard, and of the breadth of two or three yards, stretching along the coast as far as the eye could reach, and always retiring with the water. When this cloud came to be examined, it proved to be nothing else than so much space filled with young shrimps, in the act of

bounding into the air from the shallow margin of the water, or from the wet sand. If any motion of a mute animal could express delight, it was this: if they had meant to make signs of their happiness, they could not have done it more intelligibly. Suppose, then, what I have no doubt of, each individual of this number to be in a state of positive enjoyment, what a sum collectively of gratification and pleasure have we here before our view!—The young of all animals appear to me to receive pleasure simply from the exercise of their limbs and bodily faculties, without reference to any end to be attained, or any use to be answered, by the exertions. A child, without knowing any thing of the use of language, is in a high degree delighted with being able to speak. Its incessant repetition of a few articulate sounds, or perhaps of the single word which it has learned to pronounce, proves the point clearly. Nor is it less pleased with its first successful endeavours to walk, or rather to run (which precedes walking), although entirely ignorant of the importance of the attainment to its future life, and even without applying it to any present purpose. A child is delighted with speaking, without having any thing to say; and with walking, without knowing where to go. And, prior to both these, I am disposed to believe that the waking hours of infancy are agreeably taken up with the exercise of vision, or perhaps more properly speaking, with learning to see.—But it is not for youth alone, that the great Parent of creation hath provided. Happiness is found with the purring cat, no less than with the playful kitten; in the arm-chair of dozing age, as well as in either the sprightliness of the dance, or the animation of the chase. To novelty, to acuteness of sensation, to hope, to ardour of pursuit, succeeds, what is, in no inconsiderable degree, an equivalent for them all, “perception of ease.” Herein is the exact difference between the young and the old. The young are not happy but when enjoying pleasure. The old are happy when free from pain. And this constitution suits with the degrees of animal power, which they respectively possess. The vigour of youth was to be stimulated to action by impatience of rest; whilst to the imbecility

of age, quietness and repose become positive gratifications. In one important respect the advantage is with the old. A state of ease is, generally speaking, more attainable than a state of pleasure. This same perception of ease oftentimes renders old age a condition of great comfort, especially when riding at its anchor after a busy or tempestuous life. It is well described by Rousseau to be the interval of repose and enjoyment, between the hurry and the end of life. How far the same cause extends to other animal natures, cannot be judged of with certainty. The appearance of satisfaction, with which most animals, as their activity subsides, seek and enjoy rest, affords reason to believe, that this source of gratification is appointed to advanced life, under all, or most of its various forms. In the species, with which we are best acquainted, namely, our own, I am far, even as an observer of human life, from thinking that youth is its happiest season, much less the only happy one: as a Christian, I am willing to believe, that there is a great deal of truth in the following representation, given by a very pious writer, as well as an excellent man (Dr Percival of Manchester): "To the intelligent and virtuous, old age presents a scene of tranquil enjoyments, of obedient appetites, of well-regulated affections, of maturity in knowledge, and of calm preparation for immortality. In this serene and dignified state, placed as it were on the confines of two worlds, the mind of a good man reviews what is past with the complacency of an approving conscience; and looks forward with humble confidence in the mercy of God, and with devout aspirations, towards his eternal and increasing favour."—What is seen in different stages of the same life, is still more exemplified in the lives of different animals. Animal enjoyments are infinitely diversified. The modes of life, to which the organization of different animals respectively determines them, are not only of various, but of opposite kinds. Yet each is happy in its own. For instance, animals of prey live much alone; animals of a milder constitution, in society. Yet the herring, which lives in shoals, and the sheep, which lives in flocks, are not more happy in a crowd, or more contented amongst their compa-

nions, than is the pike, or the lion, with the deep solitudes of the pool or the forest. At this moment,—in every given moment of time,—how many myriads of animals are eating their food, gratifying their appetites, ruminating in their holes, accomplishing their wishes, pursuing their pleasures, taking their pastimes! In each individual, how many things must go right for it to be at ease; yet how large a proportion out of every species is so in every assignable instant! *Paley.*

ON THE PARENTAL INSTINCT OF INSECTS.

INSECTS undergo as severe privations, as the largest quadrupeds, in nourishing their offspring; expose themselves to as great risk in defending them; and, in the very article of death, exhibit as much anxiety for their preservation. A very large proportion of them, indeed, are doomed to die before their young come into existence; but these, like affectionate parents in similar circumstances, employ their last efforts in providing for the children, that are to succeed them.—Observe the motions of that common white butterfly, which you see flying from herb to herb. You perceive that it is not food she is in pursuit of; for flowers have no attraction for her. Her object is the discovery of a plant, that will supply the sustenance appropriated by Providence to her young, upon which to deposit her eggs. Her own food has been honey drawn from the nectary of a flower. This, therefore, or its neighbourhood, we might expect, would be the situation she would select for them. But no: as if aware that this food would be to them poison, she is in search of some plant of the cabbage tribe. But how is she to distinguish it from the surrounding vegetables? She is taught of God! Led by an instinct far more unerring than the practised eye of the botanist, she recognises the desired plant the moment she approaches it, and upon this she places her precious burden; yet not without the further precaution of ascertaining, that it is not pre-occupied by the eggs of some other butterfly. Having fulfilled this duty, from which no obstacles short of absolute impossi-

bility, no danger, however threatening, can divert her, the affectionate mother dies.—The dragon-fly is an inhabitant of the air, and could not exist in water; yet, in this element, which is alone adapted for her young, she ever carefully drops her eggs.—The larvæ of the gadfly are destined to live in the stomach of the horse. How shall the parent, a two-winged fly, conduct them thither? By a mode truly extraordinary. Flying round the animal, she curiously poises her body for an instant, while she glues a single egg to one of the hairs of his skin, and repeats this process until she has fixed, in a similar way, many hundred eggs. These, after a few days, on the application of the slightest moisture attended by warmth, hatch into little grubs. Whenever, therefore, the horse chances to lick any part of his body, to which they are attached, the moisture of the tongue discloses one or more grubs, which, adhering to it by means of the saliva, are conveyed into the mouth, and thence find their way into the stomach. But here a question occurs to you. It is but a small portion of the horse's body, which he can reach with his tongue: what, you ask, becomes of the eggs deposited on other parts? I will tell you how the gadfly avoids this dilemma; and I will then ask you, if she does not discover a provident forethought, a depth of instinct, which almost casts into shade the boasted reason of man. She places her eggs only on those parts of the skin, which the horse is able to reach with his tongue: nay, she confines them almost exclusively to the knee or the shoulder, which he is sure to lick. What could the most refined reason, the most precise adaptation of means to an end, do more?—Nor less admirable is the parental instinct of that vast tribe of insects known by the name of ichneumons, whose young are destined to feed upon the living bodies of other insects. You see this animal alight upon the plants, where the caterpillar (which is the appropriate food for her young), is to be met with, run quickly over them, carefully examining every leaf, and, having found the unfortunate object of her search, insert her sting into its flesh, and there deposit an egg. In vain her victim, as if conscious of its fate, writhes its body, spits out an acid fluid, and brings

into action all the organs of defence, with which it is provided. The active ichneumon braves every danger, and does not desist, until her courage and address have ensured subsistence for one of her future progeny. Perhaps, however, she discovers that she has been forestalled by some precursor of her own tribe, that has already buried an egg in the caterpillar she is examining. In this case she leaves it, aware that it would not suffice for the support of two, and proceeds in search of some other yet unoccupied. The process is of course varied in the case of those minute species, of which several, sometimes as many as 150, can subsist in a single caterpillar. The little ichneumon repeats her operations, until she has darted into her victim the requisite number of eggs. The larvæ, hatched from the eggs thus ingeniously deposited, find a delicious banquet in the body of the caterpillar, which is sure eventually to fall a victim to their ravages. So accurately, however, is the supply of food proportioned to the demand, that this event does not take place until the young ichneumons have attained their full growth. In this strange and apparently cruel operation, one circumstance is truly remarkable. The larva of the ichneumon, though every day, perhaps for months, it gnaws the inside of the caterpillar, and though at last it has devoured almost every part of it except the skin and intestines, carefully all this time avoids injuring *the vital organs*, as if aware that its own existence depends on that of the insect, on which it preys. Thus the caterpillar continues to eat, to digest, and to move, apparently little injured, to the last, and only perishes when the grub within it no longer requires its aid.—Another tribe of ichneumons, whose activity and perseverance are equally conspicuous, like the insidious cuckoo, contrive to introduce their eggs into the nests, in which bees and other insects have deposited theirs. With this view, they are constantly on the watch, and the moment the unsuspecting mother has quitted her cell, for the purpose of collecting a store of food or materials, glide into it and leave an egg, the germ of a future assassin of the larva, that is to spring from that deposited by its side.—There is a spider common under clods of earth, which may at

once be distinguished by a white globular silken bag, about the size of a pea, in which she has deposited her eggs, attached to the extremity of her body. Never miser clung to his treasure with more tenacious solicitude, than this spider to her bag. Though apparently a considerable encumbrance, she carries it with her every where. If you deprive her of it, she makes the most strenuous efforts for its recovery; and no personal danger can force her to quit the precious load. Are her efforts ineffectual?—a stupefying melancholy seems to seize her, and, when deprived of the first object of her cares, existence itself seems to have lost its charms. If she succeeds in regaining her bag, or you restore it to her, her actions demonstrate the excess of her joy. She eagerly seizes it, and with the utmost agility, runs off with it to a place of security. Bonnet put this wonderful attachment to an affecting and decisive test. He threw a spider with her bag into the cavern of a large ant-lion, a ferocious insect, which conceals itself at the bottom of a conical hole constructed in the sand, for the purpose of catching any unfortunate victim, that may chance to fall in. The spider endeavoured to run away, but was not sufficiently active to prevent the ant-lion from seizing her bag of eggs, which it attempted to pull under the sand. She made the most violent efforts to defeat the aim of her invisible foe, and, on her part, struggled with all her might. The *gluten*, however, which fastened her bag, at length gave way, and it separated; but the spider instantly regained it with her jaws, and redoubled her efforts to rescue the prize from her opponent. It was in vain; the ant-lion was the stronger of the two, and, in spite of all her struggles, dragged the object of contestation under the sand. The unfortunate mother might have preserved her own life from the enemy; she had but to relinquish her bag, and escape out of the pit; and it was only by force that Bonnet at length withdrew her from the unequal conflict. But the bag of eggs remained with the assassin; and, though he pushed her repeatedly with a twig of wood, she still persisted in continuing on the spot. Life seemed to have become a burden to her, and all her pleasures to have been buried in the grave, which

contained the germ of her progeny. The attachment of this affectionate mother is not confined to her eggs. After the young spiders are hatched, they make their way out of the bag by an orifice, which she is careful to open for them, and without which they could never escape: and then, like the young of the Surinam toad, they attach themselves in clusters upon her back, belly, head, and even legs; and in this situation, where they present a very singular appearance, she carries them about with her, and feeds them until their first moult, when they are big enough to provide their own subsistence. I have more than once been gratified by a sight of this interesting spectacle; and, when I nearly touched the mother, thus covered by hundreds of her progeny, it was most amusing to see them all leap from her back, and run away in every direction.

Kirby and Spence.

ON THE SPIDER'S WEB.

WHAT, if we had not witnessed it, would seem more incredible, than that any animal should spin threads, weave these threads into nets, more admirable than ever fowler or fisherman fabricated, suspend them with the nicest judgment in the place most abounding in the wished-for prey, and, there concealed, watch patiently its approach? In this case, as in many others, we neglect actions in minute animals, which, in the larger, would excite our endless admiration. How would the world crowd to see a fox, which should spin ropes, weave them into an accurately-meshed net, and extend this net between two trees, for the purpose of entangling a flight of birds! Or should we think we had ever expressed sufficient wonder, at seeing a fish, which obtained its prey by a similar contrivance? Yet there would, in reality, be nothing more marvellous in their procedures, than in those of spiders, which, indeed, the minuteness of the agent renders more wonderful. The thread spun by spiders is in substance similar to the silk of the silkworm, and other caterpillars, but of a much finer quality. As in them, it proceeds from reservoirs

into which it is secreted in the form of a viscid gum. If you examine a spider, you will perceive four or six protuberances or spinners. These are the machinery, through which, by a process more singular than that of rope-spinning, the thread is drawn. Each spinner is furnished with a multitude of tubes, so numerous and so exquisitely fine, that a space often not much bigger than the pointed end of a pin is furnished, according to Reaumur, with a thousand of them. From each of these tubes, consisting of two pieces, the last of which terminates in a point infinitely fine, proceeds a thread of inconceivable tenuity, which, immediately after issuing from it, unites with all the other threads into one. Hence from each spinner proceeds a compound thread; and these four threads again unite, and form the thread we are accustomed to see, which the spider uses in forming its web. Thus a spider's thread, even spun by the smallest species, and when so fine, that it is almost imperceptible to our senses, is not, as we suppose, a single line, but a rope composed of at least four thousand strands. How astonishing! But to feel all the wonder of this fact, we must follow Leeuwenhoek in one of his calculations on the subject. This renowned microscopic observer found, by an accurate estimation, that the threads of the minutest spiders, some of which are not larger than a grain of sand, are so fine, that four millions of them would not equal in thickness one of the hairs of his beard. The spider is gifted by her Creator with the power of closing the orifices of the spinners at pleasure, and can thus, in dropping from a height by her line, stop her progress at any point of her descent. The only other instruments, employed by the spider in weaving, are her feet, with the claws of which she usually guides, or keeps separated into two or more, the line from behind; and, in many species, these are admirably adapted for the purpose, two of them being furnished underneath with teeth, like those of a comb, by means of which the threads are kept asunder. But another instrument was wanting. The spider, in ascending the line, by which she has dropped herself from an eminence, winds up the superfluous cord into a ball. In per-

forming this, the pectinated claws would not have been suitable. She is, therefore, furnished with a third claw between the other two, and is thus provided for every occasion.—The situations, in which spiders place their nets, are as various as their construction. Some prefer the open air, and suspend them in the midst of shrubs or plants, most frequented by flies and other small insects, fixing them in a horizontal, a vertical, or an oblique direction. Others select the corners of windows and of rooms, where prey always abounds; while many establish themselves in stables and neglected out-houses, and even in cellars and desolate places, in which one would scarcely expect a fly to be caught in the month.—The most incurious observer must have remarked the great difference, which exists in the construction of spiders' webs. Those, which we most commonly see in houses, are of a woven texture similar to fine gauze, and are appropriately termed *webs*; while those most frequently met with in the fields are composed of a series of concentric circles, united by radii diverging from the centre, the threads being remote from each other. These last are with greater propriety termed *nets*, and the insects, which form them, proceeding on geometrical principles, may be called *geometricians*; while the former can aspire only to the humbler denomination of *weavers*.—The *weaving* spider, which is found in houses, having selected some corner for the site of her web, and determined its extent, presses her spinners against one of the walls, and thus glues it to one end of her thread. She then walks along the wall to the opposite side, and there, in like manner, fastens the other end. This thread, which is to form the only margin or selva of the web, and requires strength, she triples or quadruples, by a repetition of the operation just described; and from it she draws other threads in various directions, the interstices of which she fills up, by running from one to the other, and connecting them by new threads, until the whole has assumed the gauze-like texture which we see. The web just described presents merely a simple horizontal surface, but others, more frequently seen in out-houses and amongst bushes, possess a very artificial appendage. Besides the

main webs, the spider carries up, from its edges and surface, a number of single threads, often to the height of many feet, joining and crossing each other in various directions. Across these lines, which may be compared to the tackling of a ship, flies seem unable to avoid directing their flight. The certain consequence is, that, in striking against these ropes, they become slightly entangled, and, in their endeavours to disengage themselves, rarely escape being precipitated into the net spread underneath for their reception, where their doom is inevitable. But the net is still incomplete. It is necessary that our hunter should conceal her grim visage from the game, for which she lies in wait. She does not, therefore, station herself upon the surface of her net, but in a small silken apartment, constructed below it, and completely hidden from view. But, thus removed from her net, and entirely out of sight of it, how is she to know when her prey is entrapped? For this difficulty our ingenious weaver has provided. She has taken care to spin several threads, from the edge of the net to that of her hole, which at once inform her, by the vibrations, of the capture of a fly, and serve as a bridge, on which in an instant she can run to secure it.— You will readily conceive, that the *geometrical* spiders, in forming their concentric-circled nets, follow a process very different from that just described; than which, indeed, it is in many respects more curious. As the net is usually fixed in a perpendicular or somewhat oblique direction, in an opening between the leaves of some shrub or plant, it is obvious that, round its whole extent, will be required lines, to which can be attached those ends of the radii, that are farthest from the centre. Accordingly, the construction of these exterior lines is the spider's first operation. She seems careless about the shape of the area which they enclose, well aware that she can as readily inscribe a circle in a triangle as in a square, and, in this respect, she is guided by the distance or proximity of the points, to which she can attach them. She spares no pains, however, to strengthen and keep them in a proper degree of tension. With the former view, she composes each line of five, or six, or even more threads glued together; and, with the latter,

she fixes to them, from different points, a numerous and intricate apparatus of smaller threads. Having thus completed the foundation of her snare, she proceeds to fill up the outline. Attaching a thread to one of the main lines, she walks along it, guiding it with one of her hind feet, that it may not touch in any part, and be prematurely glued, and crosses over to the opposite side, where, by applying her spinners, she firmly fixes it. To the middle of this diagonal thread, which is to form the centre of her net, she fixes a second, which, in like manner, she conveys and fastens to another part of the lines encircling the area. Her work now proceeds rapidly. During the preliminary operations she sometimes rests. But no sooner are the marginal lines of her net firmly stretched, and two or three radii spun from its centre, than she continues her labour so quickly and unremittingly, that the eye can scarcely follow her progress. The radii, to the number of about twenty, giving the net the appearance of a wheel, are speedily finished. She then proceeds to the centre, quickly turns herself round, and pulls each thread with her feet to ascertain its strength, breaking any one that seems defective, and replacing it by another. Next she glues immediately round the centre five or six small concentric circles that are to remain, which she now proceeds to construct. Placing herself at the circumference, and fastening her thread to the end of one of the radii, she walks up that one towards the centre, to such a distance as to draw the thread from her body of a sufficient length to reach to the next. Then, stepping across and conducting the thread with one of her hind feet, she glues it with her spinners to the point in the adjoining radius, to which it is to be fixed. This process she repeats, until she has filled up nearly the whole space, from the circumference to the centre, with concentric circles, distant from each other about two lines. She always, however, leaves a vacant interval around the smallest first-spun circles, that are nearest the centre, but for what end I am unable to conjecture. Lastly, she runs to the centre, and bites away the small cotton-like tuft that unites all the radii, which, being now held together by the circular threads, have thus pro-

bably their elasticity increased; and, in the circular opening resulting from this procedure, she takes her station and watches for her prey.—You must not infer, that the toils of spiders are, in every part of the world, formed of such fragile materials, as those which we are accustomed to see, or that they are every where contented with small insects for their food. An author in the Philosophical Transactions asserts, that the spiders of Bermudas spin webs between trees seven or eight fathoms distant, which are strong enough to ensnare a bird as large as a thrush: and Sir G. Staunton informs us, that, in the forests of Java, spiders' webs are met with of so strong a texture, as to require a sharp cutting instrument to make way through them. *Kirby and Spence:*

ON THE MEANS OF DISGUISE, &c. POSSESSED BY INSECTS FOR THEIR PROTECTION.

WITH the insect tribes infinite hosts of enemies wage continual war, many of whom derive the whole of their subsistence from them; and, amongst these tribes themselves, there are numerous civil broils, the strong often preying upon the weak, and the cunning upon the simple; so that, unless a watchful Providence (which cares for all its creatures, even the most insignificant), had supplied them with some mode of resistance or escape, this innumerable race must soon be extirpated. These means of defence are of two kinds, *passive*, or such as are independent of any efforts of the insect,—and *active*, or such as result from certain efforts of the insect, in the employment of those instincts and instruments, with which Providence has furnished it for this purpose.—Some of the principal *passive* means of defence, with which insects are provided, are derived from their colour and form, by which they deceive their enemies. Sometimes they so exactly resemble the soil which they inhabit, that it must be a practised eye which can distinguish them from it. Thus, one of our scarcest British weevils, by its gray colour spotted with black, so closely resembles the soil, consisting of white sand mixed with black earth, on which I have always

found it, that its chance of escape, even though it be hunted for by the sharp eye of an entomologist, is not small. Another insect of the same tribe abounds in pits of a loamy soil, of the same colour precisely with itself; a circumstance, that doubtless occasions many to escape from their pitiless foes. Several other weevils resemble chalk, and perhaps inhabit a chalky or white soil. Many insects, also, are like pebbles and stones, both rough and polished, and of various colours; a resemblance, which we may safely regard as given them to enable them to elude the vigilance of their enemies. A numerous host of our little animals escape from birds and other assailants, by their resemblance to the colour of the plants, or parts of them, which they inhabit, or the twigs of shrubs and trees, their foliage, flowers, and fruit. Many of the mottled moths, which take their station of diurnal repose on the north side of the trunks of trees, are with difficulty distinguished from the gray and green lichens that cover them. There is one caterpillar, which, when it feeds on a yellow lichen, is always yellow; but, when upon a gray lichen, its hue becomes gray: this change is probably produced by the colour of its food. A kind of Mayfly frequents the black flower-spikes of the common sedge, which fringes the banks of our rivers: I have often been unable to distinguish it from them, and the birds probably often make the same mistake and pass by it. The spectre tribe go still further in this resemblance, representing a small branch with its spray. I have one from Brazil eight inches long, that, unless it was seen to move, could scarcely be conceived to be any thing else; the legs, as well as the head, having their little snugs and knobs, so that no imitation can be more accurate. Other insects of various tribes represent the leaves of plants, living, decayed, and dead; some in their colour, and some both in their colour and shape. The caterpillar of a moth that feeds upon the privet is so exactly of the colour of the underside of the leaf, upon which it usually sits in the daytime, that you may have the leaf in your hand and yet not discover it. There are several species that resemble dry leaves so exactly, by their opacity, colour, rigidity, and veins, that, were certain parts of the animal only visible, even

after a close examination it would be generally affirmed to be nothing but a dry leaf. Some species are extremely like flowers and fruits. I recollect to have seen, in a collection made by Mr Masson at the Cape of Good Hope, a kind of insect, arranged by Linné with the grasshoppers, which, in certain positions, had very much the appearance of a fine flower of a rose or pink colour. A most beautiful and black brilliant beetle, found by Captain Hancock in Brazil, by the inequalities of its ruby-coloured surface strikingly resembles some kinds of fruit. Some singular larvæ live in the nests of humble-bees, and are the offspring of a particular genus of fly, many of the species of which strikingly resemble those bees in shape, clothing, and colour. Thus has the Author of Nature provided, that they may enter these nests, and deposit their eggs undiscovered. Did these intruders venture themselves amongst the humble-bees in a less kindred form, their lives would probably pay the forfeit of their presumption.—The *active* means of defence, which tend to secure insects from injury or attack, are much more numerous and diversified than the passive; and also more interesting, since they depend, more or less, upon the efforts and industry of these creatures themselves. Of these, the attitudes which they assume, for the purpose of deceiving their enemies, are none of the least remarkable. Some beetles, by rolling themselves up in a particular manner, put on the appearance of pebbles. There is a species of wood-louse, which, when alarmed, rolls itself up into a little ball. In this attitude its legs, and the underside of the body, which are soft, are entirely covered and defended by the hard crust, that forms the upper surface of the animal. These balls are perfectly spherical, black and shining, and belted with narrow white bands, so as to resemble beautiful beads; and, could they be preserved in this form and strung, would make very ornamental necklaces and bracelets. At least so thought Swammerdam's maid, who, finding a number of those insects thus rolled up in her master's garden, mistaking them for beads, employed herself in stringing them on a thread; when, to her great surprise, the poor animals beginning to move and struggle for their liberty, she,

crying out and running away in the utmost alarm, threw down her prize. The golden-wasp tribe, also, roll themselves up, as I have often observed, into a little ball, when alarmed, and can thus secure themselves,—the upper surface of the body being remarkably hard and impenetrable to their weapons,—from the stings of those insects, whose nests they enter with the view of depositing their eggs in their offspring. Other insects endeavour to protect themselves from danger by simulating death. The common dungchaffer, when touched or in fear, sets out its legs as stiff, as if they were made of iron wire, which is their posture when dead ; and, remaining perfectly motionless, thus deceives the rooks, which prey upon them, and, like the ant-lion, will eat them only when alive. A different attitude is assumed by one of the treechaffers, probably with the same view. It sometimes elevates its posterior legs into the air, so as to form a straight vertical line, at right angles with the upper surface of its body. Another genus of insects of the same order, the pill-beetles, have recourse to a method the reverse of this. They pack their legs, which are short and flat, so close to their body, and lie so entirely without motion when alarmed, that they look like a dead body, or rather the dung of some small animal. Amongst the weevil tribe, there is one species, which, when an entomological finger approaches them, as I have often experienced to my great disappointment, applying the rostrum and legs to the underside of their trunk, fall from the station on which you hope to entrap them, to the ground or among the grass ; where, lying without stirring a limb, they are scarcely to be distinguished from the soil around them. Thus also, doubtless, they often disappoint the birds, as well as the entomologist. A little timber-boring beetle has long been famous for a most pertinacious simulation of death. All that has been related of the heroic constancy of American savages, when taken and tortured by their enemies, scarcely comes up to that which these little creatures exhibit. You may maim them, pull them limb from limb, roast them alive over a slow fire, but you will not gain your end ; not a joint will they move, nor show the least

symptom that they suffer pain. Do not think, however, that I ever tried these experiments upon them myself, or that I recommend you to do the same. I am content to believe the fact, that I have here stated, upon the concurrent testimony of respectable witnesses, without feeling any temptation to put the constancy of the poor insect again to the test. A similar apathy is shown by some species of the saw-fly, and by spiders.

Kirby and Spence.

ON THE ADAPTATION OF PLANTS TO THEIR RESPECTIVE COUNTRIES.

“A HUNDRED thousand species of plants upon the surface of the earth!” you exclaim. Yes: and, what is more surprising still, every one of these species has its *native country*,—some particular region, or peculiar spot, on the surface of the globe, to which, in its constitution and formation, it is peculiarly adapted. Some are formed to spring up into luxuriance beneath the scorching rays of a tropical sun,—some are so constituted as to vegetate beneath the snow, and to withstand the severity of a polar winter,—some are made to deck the valley with their variegated beauties,—and some are formed “to blush unseen, and give their sweetness to the desert air” amidst alpine solitudes: but there is not one of those numerous plants, which has not its particular place assigned it. It would be equally vain to attempt to make some of these vegetable forms change their places (without a corresponding change of temperature) with impunity, as it would be to make the experiment of removing the finny inhabitants of the ocean from their native element, in order to make them harmonize and live in comfort among the feathery tenants of the grove. The wisdom and goodness of the Deity are indeed no less manifested in the geographical distribution, than in the curious process observed in the vegetation, the wonderful structure, and other striking peculiarities of plants. We have not room to multiply instances. But where, it may be asked, could the dense woods, which constitute the Brazilian forest, be

more appropriately situated? Where could the delightful vistas, and pleasant walks, and refreshing harbours, of the many-trunked *Baniam-tree*, be better placed? Where could that numerous host of natural umbrellas, the family of the palms, which overshadow, with their luxuriant and projecting foliage, almost every island, rock, and sand-bank, between the tropics, display their cooling shades with better effect? Where, in short, could that wonderful exuberance of the earth's bounty, the *Bread-fruit-tree*, by which, in the words of Captain Cook, "if a man plant but ten trees in his whole lifetime" (and that he may do in an hour), "he will as completely fulfil his duty to his own, and to future generations, as the natives of our less temperate climate can do, by ploughing in the winter's cold, and reaping in the summer's heat, as often as these seasons return:"—where, I say, can this exuberance be more beneficially manifested, than in those regions, where "the same glowing beams of the sun, that raise the plant into a shrub, and the shrub into a tree," render the gloom of the forest, and the intervening screen of the overhanging foliage, so desirable,—where the least exertion becomes oppressive, and coolness and ease may be said to constitute the principal wants of the inhabitants? And where, it may be further inquired, could those immense fields, upon which are raised our various crops of *corn*, be better made to expand their extensive surfaces, and lay open their treasures to the influence of the sun, than in those temperate regions of the globe, where, instead of being hurtful, a moderate degree of labour is conducive to health, and the agricultural labourer goes forth to his work in the morning, and returns in the evening, rather invigorated, than exhausted, by the ordinary occupations of the day? If we extend our views much farther to the north, we may in vain look for the spontaneous luxuriance of the torrid zone, or the golden-coloured fields of the intervening climates: but here we shall find, what is at once more suitable to the climate and the wants of its inhabitants, a plentiful supply of the *Rein-deer-lichen*, which, being formed by nature to vegetate beneath the snow, is there found out, in requisite abundance, by that useful creature, whose

name it bears, and which is of itself a treasure to the inhabitants of those regions. The esculent properties of the *Iceland-moss* are now beginning to be better understood; and in what part of the habitable world could this singularly nutritious vegetable have been more judiciously and mercifully made to abound, than in that island of wonderful contrasts, where the variable climate is often so unfavourable to vegetation of a larger growth, and the hopes of the husbandman are so repeatedly disappointed by unwelcome visitants, in the form of icy particles floating in the air? The *pitcher-plant* of the eastern, and the *milk* or *cow tree* of the western world, may each of them be reckoned among Nature's wonderful contrivances, and be justly regarded as evidences of the wisdom and goodness of the Being, who knows so well how to proportionate the acts of his bounty to the necessities and wants of his creatures. The singular appendages, which form the extremities of the *pitcher-plant*, are so many urns, containing a clear, wholesome, and well-tasted water. In the morning the lid is closed, but it opens during the day, when a portion of the water evaporates: this, however, is replenished in the night, and each morning the vessel is full, and the lid shut. As this plant grows in sultry climates, and is found in the island of Java, in the most stony and arid situations, how welcome and exhilarating must the sight of it be often to the weary traveller; and, from the marks of teeth upon the vessel, it has been narrated, that "it is evident that beasts often supply their wants at the same plenteous source." The *milk-tree* or *cow-tree*, so called on account of the resemblance its singular juice bears to the milk of animals, in the place of which M. Humboldt has seen it used for every domestic purpose, is thus described by that enterprising traveller: "I confess that, among the great number of curious phenomena I have observed, in the course of my travels, there are few, which have made a stronger impression on my mind, than the *cow-tree*. On the barren declivities of a rock grows a tree, whose leaves are dry and coriaceous; its thick ligneous roots scarcely enter the rock; for several months in the year, rain scarcely waters its fan-shaped

leaves ; the branches appear dry and dead ; but, when an incision is made in the trunk, a sweet and nutritious milk flows from it. It is at the rising of the sun that the vegetable liquid runs most abundantly—then the natives and negroes are seen to come from all parts, provided with vessels to receive the milk, which becomes yellow, and thickens at the surface. Some empty their vessels under the same tree ; others carry them home to their children. It is like a shepherd distributing to his family the milk of his flock. If those, who possess these precious trees near their habitation, drink with so much pleasure their beneficent juice, with what delight will the traveller, who penetrates in these mountains, appease with it his hunger and thirst ! Thus we have seen, on the road from Patito to Puerto Cabello, all these trees full of incisions, made by the traveller, who seeks them with anxiety." The few instances here recorded may serve as general specimens of that wise ordination, universally to be observed, if duly attended to, in the geographical arrangement and distribution of vegetables.

Popular Philosophy.

ON THE PLANTS WHICH FORM THE LINK BETWEEN
THE VEGETABLE AND ANIMAL KINGDOMS.

WHAT a near approach do some plants make to that superior order of creation immediately above them in the scale of existence ! The *sensitive plant*, when slightly touched, evinces something like the timidity of our harmless animals. The *Hedysarum gyrans*, or moving plant of the east, exhibits an incessant and spontaneous movement of its leaves during the day, in warm and clear weather ; but in the night season, and in the absence of light and heat, its motions cease, and it remains as it were in a state of quiescence. The American *Venus fly-trap*, like an animal of prey, seems to lie in wait to catch the unwary insect. The leaves of this plant are jointed, and furnished with two rows of prickles. Their surfaces are covered with a number of minute glands, which secrete a sweet li-

quor, and allure the approach of flies. When these parts are touched by the legs of a fly, the two lobes of the leaf instantly rise up, the rows of prickles lock themselves fast together, and squeeze the unwary animal to death. The *American cowslip*, also, is said to hang down its head, to guard the tender stamina from being injured by rain. When a pole is placed at a considerable distance from an unsupported *vine*, the branches of which are proceeding in a contrary direction from that of the pole, in a short time (says Smellie) it alters its course, and stops not till it clings round the pole. A *hop-plant*, turning round a pole, follows the course of the sun, and soon dies if forced into an opposite direction; and, when the straight branches of a *honey-suckle* can no longer support themselves, they gather strength by becoming spiral. The *convolvulus* is known to roll itself up at an early hour. The *radiated flowers* are observed to close their petals, as the beautiful orb, whose form they bear, sinks beneath the horizon: and, amongst the number, the little modest *mountain-daisy* is seen to draw together its crimson tips into one point, and consign itself, as it were, to a temporary repose. Nature, it is said, has provided us with various substitutes for watches besides the *sun-flower*, which follows the dazzling orb of day, many others opening and shutting their petals at certain hours; thus constituting what Linnæus calls the *horologe* or *watch of Flora*. There is also another description of flowers, denominated *meteorous*, which less accurately observe the hour of unfolding, but expand sooner or later, according to the state of the weather, or cloudiness, moisture, or pressure of the atmosphere. These may be called *vegetable-barometers*, and among the number the *African marigold*, which, in dry weather, expands at six or seven in the morning, and shuts at four in the afternoon: it affords a sure indication that rain will fall in the course of the day, when it continues shut after the usual hour of opening. These are wonderful properties of the vegetable creation, and serve as links to connect it with the order of animals, and preserve unbroken the most minute gradations in nature's universal chain.

Popular Philosophy.

ON THE VARIOUS USES OF TREES AND PLANTS.

TREES, those stupendous specimens of creative art, spread not their wide-extended roots, nor lift their lofty heads in vain. Beneath their cooling shades our flocks and herds find a comfortable asylum, from the scorching rays of the summer sun. The wild stragglers of the forest have a place of refuge among their woods and thickets,—whilst the feathery songsters of the grove build their little dwellings in security, and sing among their branches: “as for the stork, the fir-trees are her house.” But in what a variety of respects, besides affording the inhabitants of warm climates an agreeable shelter from the mid-day heat, do these, and the different members of the shrubby race, yield their services, or are made subservient to the use of man! The *bread-fruit-tree* of the Pacific Ocean; the *date-palms*, which wave along the coasts of the Mediterranean; the *calabash* of the West Indies, and the *cocoa-nut-tree* of the East Indies; the *cabbage-tree* of East Florida, and the *magney* or *mati-tree* of New Spain; and the accommodating *pawpaw*, which grows in tropical climates both of the Western and Eastern world, are each rendered remarkable for the number of other useful properties they possess, besides contributing their services, in the way of most suitable food, to the inhabitants of those climes, in which they severally grow. During a considerable portion of the year, the *bread-fruit-tree* affords the chief sustenance of the Society Islanders, it being in season eight months of the year. The natives of these islands collect it without the smallest trouble; they have only to climb the tree to gather its fruit. A kind of cloth is fabricated from the bark, the leaves are converted into towels and wrappers, the wood is made into boats and houses, and a kind of cement is prepared by boiling the juice in *cocoa-nut-oil*. Nearly every part of the *date-tree* may be converted to some useful purpose. A considerable part of the inhabitants of Egypt, of Arabia, and Persia, subsist almost entirely on its fruit, and it is also esteemed for its medicinal virtues. From the leaves,

they make couches, baskets, mats, bags, and brushes; from the branches, cages and fences; from the fibres of the boughs, thread, ropes, and rigging; from the sap, a spirituous liquor; from the wood, which also furnishes fuel, the beams and rafters of the houses of the people, as well as some implements of husbandry, are constructed. The stones are ground to make oil, and the refuse is given to the cattle. The shell of the fruit of the *calabash* is employed in the manufacture of water-vessels, goblets, and cups of almost every description. So hard and close-grained is the calabash, that, when it contains any kind of fluid, it may even, it is said, be put on the fire without injury. A medicinal juice is extracted from this useful plant; and of it the Indians construct some of their musical instruments. The *cocoa-nut-tree* supplies the inhabitants with bread, milk, and oil; it affords them a strong spirit, vinegar, and barm; timber to build their huts, and thatch to cover them. The shell is a useful article among their household vessels, and the coarse fibrous husk surrounding it, as well as the bark itself, is made into cloth and cordage. Of the wood of the *cocoa-nut-tree*, sewed together with a yarn spun from the bark, a vessel is constructed,—of the same wood the mast is formed,—of the bark and fibrous covering of the shell the sails are woven; so that, from the different parts of this valuable vegetable, the whole vessel, as well as the habitations of the natives of the *cocoa-nut* islands, are completed. There is a fibrous substance in the leaves of the *cabbage-tree*, which is sometimes spun like hemp into different kinds of cordage. The sockets and grooves, formed by the broad part of the foot-stalks of the leaves, are used by the negroes as cradles for their children. The trunks, when cleared of the pith, serve as water-pipes and gutters, and of the pith a kind of sago is manufactured. The *magney* or *mati tree* affords to the natives of New Spain, where it grows copiously, water, wine, oil, vinegar, honey, syrup, thread, needles, &c. In short, there are no less than nineteen services, which this tree, though small, yields to the inhabitants. The leaves serve for covering their houses; out of its roots strong and thick ropes are made; and a fine yarn may be spun

out of the fibres of the leaves ; which, being converted into cloth, serves for the purpose of clothing. The bark of the *pawpaw-tree* is manufactured by the Indians into cordage. The leaves are used as soap, and the stem is converted into water-pipes. It is said that a small quantity of the juice, when rubbed upon butcher-meat, renders it tender without hurting its quality. The *plantain* and the *banana*,—the *sago-palm* and the *sugar-cane* of the tropical regions, as well as the *fig-tree* of the East, and the *sugar-maple* of North America, and the *cow-tree*, mentioned by Humboldt,—and the *butter-tree* of Mungo Park,—and the *coffee* and the *tea tree*,—and an endless variety of others, contribute to our wants in the form of food. We have already noticed the *pitcher-plant*, besides which there are several others, which yield a supply of refreshing water. But we must not let these remarkable instances carry away our thoughts, from the no less useful, though much more common, blessings of Providence, in these respects. Let it never be forgotten that the *vine*, which furnishes the “ wine that maketh glad the heart of man,”—the *apple* and the *pear* trees, which furnish such an abundant supply of cider and perry,—the *currant*, the *mulberry*, and the *elder*, whose juices are so often employed in the form of our home-made wines,—and the *hop*, so much used in the process of brewing, are all most widely diffused in the garden of creation, and contribute each their quota towards supplying us with a nutritious, pleasant, and wholesome beverage. But it is not only in the form of meat and drink, that these vegetable appendages on the surface of the earth administer their services: for it is well known, that we are beholden to the *cotton-plants* of America and the Indies, for our calicoes and muslins, our fustians and corduroys, and other articles of clothing. Infinite is the number of those vegetable treasures, which are of use to us as medicine. The *salt-tree* of Chili yields a daily supply of fine salt. The *cinnamon*, *nutmeg*, *clove*, and *pimento* trees, as well as the *pepper*, and some other shrubs, furnish us with an abundant supply of spices. The *candle-berry-myrtle* presents the inhabitants of Nanking with a substitute for animal tallow. The Ame-

rican *wax-tree* produces a berry, which affords a useful kind of wax. The inner rind of the Egyptian *papyrus* furnished the ancients with a very simple material to write upon, as well as with baskets and slime-bedaubed boats; and, by the moderns, this useful and beautifully graceful plant is still employed in various manufactures. The *cork-tree* affords an abundant supply of that useful material in modern times. The *caoutchouc* or *syringe-tree* yields a supply of that wonderfully elastic substance called Indian rubber. Few plants are more extensively useful than the *bamboo* of the tropical regions, with which, in many places, the houses are almost wholly built, and the furniture nearly all constructed. The enormous leaves of the *fan-palm*, one of which is said to be sufficiently large to shelter twenty men, serve in the construction of tents, and in the covering of huts and cottages; and the American *palmetto* or *thatch-tree* would also appear, from its name, to be well adapted for this latter purpose.—Some trees are made, under the hands of the artificer, to contribute their services in the form of wood or timber. Some offer their services by means of the bark, as the *Peruvian-bark-tree* of South America, and the *cinnamon* and *cassia* of Ceylon and the East Indies. Some present their offerings in the shape of nuts, as the *cashew*, the *hazel*, the *chesnut*, and the *walnut*; some in the form of a softer fruit, as the *apple*, the *pear*, the *cherry*, and the *plum*. Some yield their services in the form of leaves, as the *senna* and the *tea* shrubs; others, in those of buds, as the *clove* and *caper* plants; while others, as the fragrant *jasmine* of Malabar, give out from their flowers a grateful perfume. Some exude from their pores a plentiful supply of resins and gums; some, as the *olive* and *cajeput* trees, furnish us with valuable oils: others supply us with a number of useful dyes; and the Spanish *barilla*, and prickly and shrubby *saltwort*, yield from their ashes a quantity of soda.

Popular Philosophy.

SECTION III.

ELEMENTARY SCIENCE.

GENERAL PROPERTIES OF BODIES.

ALL bodies, of whatever kind, whether solid, liquid, or æriform, are accounted to possess the following properties, IMPENETRABILITY, EXTENSION, FIGURE, DIVISIBILITY, INERTIA, and ATTRACTION.—I. By IMPENETRABILITY is understood that property, whereby a body excludes every other from occupying the place which itself possesses; so that no two bodies can possibly occupy the same space at the same time. Thus, even a pin cannot be inserted into a pincushion, nor the finest needle into a piece of linen, unless some room, however small, be made for its admission. The particles of *liquid* bodies are more easily displaced than those of solids; but such bodies are not, on that account, less *impenetrable*, in the sense which has now been affixed to that term; because no other body can at the same time occupy the place of a liquid any more than of a solid body. Thus, if a stone be put into a vessel containing water, part of the liquid will rise in order to make way for the stone; and, in like manner, if water be poured into wine, the mixture must occupy a greater space than the wine did before. Nor is air itself less impenetrable. When water is poured into a vessel, the air formerly contained in the vessel makes its escape. Plunge a phial into a basin of water, and the entry of the water into the phial will be indicated by the gurgling noise, with which the air issues forth in bubbles, in order to make way for the water. Reverse a wine-glass, and in that position immerse it in water, some water will enter the glass, because the air, to a certain extent, will compress itself to make way for the liquid; but, as soon as the air is as much compressed as it can be, not another drop of water will enter the glass. This impenetrability of

air cannot be better illustrated than by the familiar operation of a child's pop-gun. Every one knows the strong resistance which the air, in such a case, confined within the tube, makes to the admission of the rammer, until, by expelling the plug at the farther extremity, it forces a way for its own escape. Upon the same principle, if a syringe, an instrument in some respects resembling the toy that has just been mentioned, be entirely closed up at the farther extremity, it will be in vain to attempt by any force to press forward the piston (which corresponds to the rammer of the gun) to the extremity of the syringe.—II. **EXTENSION** is another general property of bodies; or, in other words, they all possess *length, breadth, and depth*; which are termed the *dimensions of extension*. A little reflection will satisfy any one, that every body, whether solid or fluid, whether a square box, a round ball, or the most slender hair, possesses each of these dimensions: and no body can possess any dimension beside these. *Height* is obviously another name for depth, the former being measured from the bottom, and the latter from the top; and *width* is, in like manner, nothing else than another name for breadth.—III. **FIGURE** (which is constituted by the limits of extension) is clearly an essential property of bodies; for nothing, which is possessed of length, breadth, and depth, can be without form of some kind or other.—IV. **DIVISIBILITY** is another general property ascribed to bodies; by which is meant their susceptibility of being divided into an indefinite number of parts. There is no particle of matter so small, that we may not conceive it divisible into still smaller parts, were we possessed of proper implements for this purpose. The actual divisibility of bodies may be illustrated by an endless variety of examples. A small quantity of salt dissolved in a basin of soup, or a small quantity of sugar dissolved in a cup of tea, gives, as every one knows, a flavour to the whole contents of the vessel, and a very few drops of red wine will give colour to a whole glass of water. It is said that a single pound of wool may be spun so fine as to extend to nearly 100 miles in length; that a single ounce of silver, when gilt with eight grains of gold, may be drawn into a wire of 13,000 feet long; and that a silken

thread, 300 yards long, has weighed only $2\frac{1}{2}$ grains. In odoriferous bodies, we have a still more striking illustration of very minute particles of a body being separated from one another. Perhaps you may not be aware, that the sensation of smell is, in every case, produced by particles called *effluvia*, which fly off from the odoriferous body, and come in contact with the nostril of the individual who smells it. This, however, undoubtedly is the case, so that you can just as little smell a rose, if none of its *effluvia* touch your nostril, as you can taste an apple without applying any part of it to your tongue. Now these *effluvia* are not only so small, as to be quite invisible, but their excessive minuteness will still better be estimated, when you consider how soon every part of a room is perfumed by a nosegay or a smelling-bottle, and the vast number of *effluvia* necessary for this purpose, while as yet there has not been the slightest *sensible* diminution, either in the bulk, or the weight, of the original body. Every particle of matter, notwithstanding its separation from the body, to which it originally belonged, however minute in itself, or invisible to human eyes, retains in its separate state all the essential properties of body. It may be changed, indeed, in point of form and qualities, as well as of dimension; may be converted from a solid into a liquid, or from a liquid may vanish into thin air; but not one created atom (so far as we have reason to believe) ever perishes or is annihilated. Not one of them is lost, but all continue, in one state or another, to fulfil the ends for which they were destined, by their all-wise Creator, in the system of his universe. When a body has been burnt to ashes, that part of it, which continues visible, is sadly shrunk indeed in dimensions, but the part which escaped in vapour, though no longer visible to the eye, has not perished, but exists as truly, and in all probability as beneficially, as when united to the body, from which it has at length been disengaged.—V. INERTIA is that property of bodies, by which they resist any change in their present state. When a body is at rest, it will require force to put it in motion. When it is in motion, it will no less require force either to stop, to retard, or accelerate that motion. . A stone thrown by the hand

would continue to move for ever through space, with unabated velocity, were it not for the resistance of the air, and the force of gravity (to be explained in a future article) by which it is brought to the ground.—VI. Another property of bodies, and one of the most important, is **ATTRACTION**, by which is meant that tendency, which subsists both between different bodies, and between the particles of the same body, to come together and unite. Were this property to cease, you would no longer see bodies falling to the earth; the earth itself would cease to perform its revolutions; nay its own fabric would instantly dissolve. It is of two kinds, *Cohesion* and *Gravity*, which shall form the subjects of the two following articles.

ON COHESIVE ATTRACTION.

COHESION is that species of attraction, which operates among the small particles of bodies, when brought extremely close to each other. Were it not for the influence of this attraction among the particles of the same body, they would fall off from each other, and the most solid mass would crumble into atoms. It is this property, for example, which keeps all the particles of that *slate* in union. Were you to break it, you could not reunite its parts, because it would not be in your power to bring the particles again so closely together, as to admit of the operation of this species of attraction. It operates among liquid as well as solid particles. What else is it, which gives to every drop of water its spherical form? Why else is it, that, when two drops touch each other, however slightly, in any one point, they immediately run together, and unite in one larger globule? But, because a liquid is so constituted, that its particles are farther apart from each other than those of a solid, the cohesive attraction is, in the case of liquids, proportionally weaker. If you open the side of a vessel which contains a liquid, the particles of the liquid immediately separate and fall to the ground, which is not the case with respect to a solid body. The particles of air are still more distant from

each other, than those of liquid bodies, and hence, though there can be no doubt that they possess the same power of attraction, which belongs to the particles of other bodies, the operation of this power is lost. It thus appears that the operation of cohesive attraction is not equally strong in all bodies; and hence it is, that one solid is harder than another, one fluid is thinner than another. Those bodies in which this attraction operates most powerfully, are termed *dense* bodies: those in which it is weak are said to be *rare*. Thus gold is a denser solid than wood; water is a rarer fluid than quicksilver. It is a well-known puzzle among children, to ask whether a pound of lead or a pound of feathers is heavier? Every one, acquainted with the real meaning of the question, will at once answer, that the *weight* in both cases is precisely the same: but the *dimensions* of the pound of feathers are greater, than those of the pound of lead, because lead is a much denser or more compact body than feathers. It is by the weight, accordingly, that we are to judge of the density of a body. A dense body will of course be much heavier, than a rare one of the same dimensions, on account of the greater quantity of matter, which it contains.—There is a curious species of cohesive attraction, which remains to be noticed, known by the name of the *capillary attraction* (that is to say, the *attraction of hairs*), because the instruments of this attraction are slender tubes like hairs. If one of these tubes be immersed in water, the fluid will immediately rise to a certain height in the tube, in consequence of the particles of the fluid being attracted by the particles of the tube. If several tubes of different bores, but all extremely narrow, be employed, the liquid will rise to different heights in each. In those of which the bore is narrower, the liquid will ascend higher. Porous bodies, such as sponge, bread, linen, &c. are composed of natural capillary tubes, which afford illustrations of this species of attraction. If you dip the corner of a bit of sugar into water, the water immediately rises through the capillary tubes of the sugar, till it reaches its remotest particle. It is upon a similar principle that blot-paper operates when used for drawing up superfluous ink.—Hitherto we have only

been considering the operation of attraction in small and near particles, its operation in larger masses, though more remote, is left for the subject of a separate article.

ON GRAVITATION.

IN the last article we considered that species of Attraction called *Cohesion*, which operates among the small particles of bodies when brought into close proximity to each other; we are now to consider that species of it called GRAVITATION, which operates also among large masses though placed at a remoter distance, with a force proportioned to the quantity of matter contained in these bodies. Every stone, which falls to the ground, is an example of this attraction: for what else is it, which occasions its fall, but the attraction of the earth? If there were no external force impelling or attracting it, why should it not, according to the general law of nature, explained in a former article under the name of *Inertia*, remain at rest? or can any reason be assigned, why it should not as readily fly up to the sky, or diverge to the right hand or to the left? Were there no other body in universal nature except the stone, there can be little doubt that it would remain quite stationary: neither would it possess any *weight*, for a single moment's reflection must satisfy you that this is not an inherent property of the stone, independent of its connexion with another body, but arises entirely from its tendency to fall to the earth. All this, however, which is now so satisfactory to every well-educated and reflecting mind, and which, when pushed to its necessary consequences, so clearly explains many of the grandest phenomena of nature, was utterly unknown till the year 1665, when the mighty discovery immortalized the name of Sir Isaac Newton, a philosopher of our own country. This discovery, glorious as it is, owed its origin to an incident of daily occurrence, and apparently of the most trivial nature. Sitting in his orchard one day, Sir Isaac saw an apple fall from a tree. This single circumstance, so familiar to us all, called up, in his reflecting mind, a long train of thought,

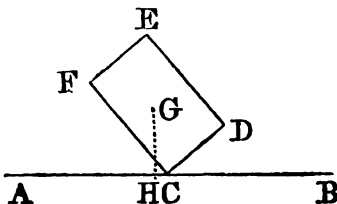
with regard to the cause of the occurrence. He could account for it on no other principle, than the supposition of an attractive power in the earth. Carrying his reflections further, he was satisfied that this attraction is not peculiar to the earth, but subsists among all bodies whatever ; that, as the earth attracts the bodies which come within the range of its influence, so itself and various other planets are, in like manner, attracted by the sun : and thus, at length, did this great man disclose to an astonished world those laws, by which the wisdom of the Almighty Ruler had governed his universe, from the first hour of its creation, but which, during so many ages of its existence, "lay hid in night."—In many cases the attraction of *Cohesion* predominates over that of *Gravitation*. Hence it is that the particles of a solid body continue united, in place of falling off to the ground, as is the case when the side is opened of a vessel containing a liquid. Thus how often do we see a projecting rock continue riveted to the cliff, in opposition to the strong force of gravitation, struggling to plunge it into the gulf beneath. The phenomena of *capillary attraction* afford an admirable illustration of the counteracting powers of cohesion and gravitation. We have seen, that, in the extremely slender tubes, by which this attraction operates, the liquid rises in opposition to the power of gravitation. But it rises only to a certain height, beyond which the gravity of the liquid will not permit it to ascend ; namely, the point at which the gravitation and cohesion balance each other. From what has now been said, it will be easy to understand the reason, why the water rises to a less height in a capillary tube of a larger bore, and why, when the bore is still further extended, it ceases to rise at all.—We formerly stated, that Newton was led to the conclusion, that all masses of matter attract each other. Why then, it may be asked, do houses not move towards each other, or take their departure to a neighbouring mountain? The solution of this question is extremely easy. It has already been mentioned, that gravitation acts with a force proportioned to the quantity of matter. Now no body on the earth's surface contains nearly as much matter as the earth itself. Therefore the earth's own attraction pre-

dominates over that of every other body. The houses are riveted to the earth so strongly by their gravity, that neither the other houses nor the mountain can draw them away. That the attraction of a mountain, however, may affect the perpendicular attraction of the earth, has actually been found by experience. The weight of a plumb-line held in the hand on the declivity of a high mountain, has been found to incline a little towards the mountain. Here, slight as the attraction of the mountain is, compared to that of the earth, yet, as the weight suspended is so much nearer the mountain than the earth's centre, the attraction of the mountain has a slight influence; so slight, indeed, that it requires very nice instruments to ascertain its effect.—If the earth attracts all bodies near its surface, it may further be asked why the atmospheric air does not, like other bodies, fall to the ground? The truth is, that it does so fall. Its lowest stratum or layer is in contact with the earth, and each inferior stratum supports that which is above it. From the pressure of the superior strata upon the inferior, the air near the surface of the earth is much denser than that of the higher regions. It may also be objected, that smoke, steam, air-balloons, &c. which ascend through the air, in place of falling to the ground, are exceptions to the general law of nature. But, in truth, these phenomena, when rightly understood, are in perfect accordance with it. If you throw a bit of cork into a tub of water, it immediately rises again to the surface; and, if you pour more water into the tub, the cork will rise still higher. The reason is obvious. The water is denser than the cork, and is therefore more strongly attracted towards the earth; and, because two bodies cannot, on account of their impenetrability (as you have already seen), occupy the same place at the same time, the water in descending displaces the cork, and forces it upwards in order to make way for itself. For the like reason, smoke and steam, and every vapour which is lighter than the surrounding atmosphere, are forced by the descent of the heavier air, to rise to a higher region, where the atmosphere is of equal density with themselves. In the same manner, Mr Green's aerial voyage from the neigh-

bourhood of Leith, which many of you witnessed, was effected by the air enclosed in his balloon being so much lighter than the atmosphere in the lower regions. You will thus understand, that a body lighter than the surrounding air ascends; that one of equal density remains suspended in it; and one of greater density falls through it. Even the falling body, however, encounters considerable resistance or obstruction from the air in its descent. If you throw a stone into a tub of water, it will fall more slowly, than if the water were taken out of the tub; and if the air, as well as the water, were taken out of the vessel, the stone would descend more rapidly still. This resistance of the air is in proportion to the surface of the body exposed to the resistance. A sheet of paper will fall much more quickly, when wrapt up into a ball, than when its whole surface is exposed to the air; and a bit of gold will fall much more slowly when beaten out into a leaf, than while it continues in its original mass. A cannon-ball of iron will fall more rapidly to the ground, than a ball of leather of the same dimensions; because the latter is more affected by the resistance of the air, in proportion to its quantity of matter. If the air were removed, the iron ball and the leather ball would fall to the ground with precisely the same velocity. To this it may be objected, that the ball of iron, on account of its greater quantity of matter, is acted upon with more force than the leather ball. But then, it ought to be remembered, on the other hand, that, for the same reason, the former will require a greater force to move it. A beautiful experiment in illustration of this is exhibited in the Natural Philosophy class. The air having been previously pumped out of a tall glass vessel called a receiver, a guinea and a light feather, let slip at the same time at the top of the vessel, fall at one and the same moment to the bottom of it. A simpler experiment you may try for yourselves: a piece of paper of the same size and figure with a penny-piece will, of course, fall much more slowly through the air than the copper; but if you lay the paper close upon the piece, so long as little air intervenes between them, they will continue to fall together.—There is in every solid body a

point, called *the centre of gravity*, about which all the parts exactly balance each other. If this point be supported the body will be steady; if not it will fall till it is supported. Thus let the line AB represent a table, and the figure

CDEF a box; the box must fall, because its centre of gravity G is not supported, as is shown by the perpendicular line GH (which is called *the line of direction*) falling on



the outside of the figure representing the box. The reason why a child or a drunk man falls is, that he does not keep his centre of gravity supported; or, in other words, because the line of direction falls without his body, instead of between his feet. All the art of a rope-dancer, in the same manner, consists in supporting his centre of gravity. It is for the same reason, that a vessel with a narrow base is so easily upset: because, if it be inclined ever so little to one side, its centre of gravity is no longer supported. You will now also perceive the reason why a ball *rolls* down a slope, while a square body only *slides* down. The ball can touch the declivity only in a single point, and, as that point is not in the line of direction, the centre of gravity is not supported. Where every part of a body is of equal density, the middle of the body, which is called *the centre of magnitude*, is also the centre of attraction. But, because one part of a body is sometimes made of heavier material than another, the centre of magnitude is not always the centre of gravity. Hence, by putting a heavy substance in part of a body, the rest of which is composed of lighter material, many entertaining experiments are shown, in which bodies refuse to remain at rest in what would appear to be their natural position. Thus also, by putting a bit of lead into the side of a cylinder of wood, the centre of gravity, in descending, will make the cylinder itself *ascend* a declivity. The centre of gravity is not always in the body, but is

sometimes in empty space. Thus the centre of gravity of a ring is the centre of the space which the ring encloses. If a body be suspended by a point in the line of direction, it will remain stationary ; but it can rest in no other position, as you may perceive by suspending a piece of pasteboard by one of its corners. When two bodies are fastened together by a bar, or string, or any power whatever, they are, in this matter, to be considered as one body, having a common centre of gravity. If the two bodies be of equal weight, the centre of gravity is in the middle of the line which unites them. If one be heavier than the other, the centre of gravity is proportionally nearer the heavy body.—Some other most important circumstances connected with gravitation remain to be noticed in illustration of the laws of motion.

LAWS OF MOTION.

MOTION, as every one knows, consists in a change of place.—It depends upon a variety of circumstances. 1. From what was formerly said with regard to the *inertia* of matter, it appears that no body begins to move, except through the operation of some power, which puts it in motion. This moving power, whether it be animate or inanimate, attractive or repulsive, is called *force*. Thus, in playing hand-ball, the blow given by the hand is the force which impels the ball ; the pulling of the horse is the force which draws a carriage ; the particles of matter are drawn together by the force of cohesion, and they are separated by the force of heat.—2. When a body is acted upon by a single force, its motion, as might be expected, is always in a straight line, and in the direction of the force which moves it.—3. The *velocity* with which a body moves (or, in other words, the distance which it goes in a given time), is always in proportion to the force which put it in motion. Thus, if of two bodies one goes eight miles an hour, while the other goes only four, the velocity of the former motion is double that of the latter, and is occasioned by the operation of a double force.

—4. Where a body is set in motion by the exertion of a single force, which instantly ceases, the motion of the body is *uniform* (or, in other words, the body moves throughout the whole of its course with the same velocity); and, if unobstructed, this motion will continue for ever. It is very true, that a stone, rolled along the ground by one impulse of the hand, goes every moment more and more slowly, until it at length stops altogether. But then, it will be remembered, that the stone, besides being exposed to the friction of the earth, and the resistance of the air, is every moment acted upon by the force of gravitation. It may perhaps be thought, that the duration of the motion will depend upon the strength or weakness of the moving force. This, however, is quite a mistake. If a body receive only a gentle impulse, its motion (as we have seen) will be slow, but this slow motion, unless counteracted by some other force, will continue for ever.—

5. The *momentum* of a moving body (that is to say, the force with which a body in motion acts upon another body,) depends upon two circumstances; namely, the quantity of matter or *weight*, and the quantity of motion or *velocity*, of the moving body. Every one knows by experience that the heavier any body is, the greater is its force; but, by increasing the velocity of a lighter body, you may render its *momentum* much greater than that of a heavier one. Thus, an arrow shot from a bow has a greater *momentum*, than a stone thrown by the hand. Upon this principle, though you may place a pound-weight upon a china plate, without doing it the slightest injury, yet, if you let the weight fall from the height of only a few inches, it will, in consequence of the velocity which it has thus acquired, dash the china to pieces. If you let a pound-weight fall upon the floor from the height only of an inch and a quarter, it will strike the floor with a *momentum* equal to twice its weight. From what has been said you will see, that, in order to ascertain the *momentum* of a body, you must multiply the weight by the velocity. Thus, the *momentum* of a body of two pounds weight, moving at the rate of 16 feet in a second, is said to be 32, because 2 multiplied into 16 gives 32; the *momentum* of a body

of one pound weight, moving at the rate of 32 feet in a second is also 32; and these *momenta* are equal to one another.—6. Wherever one body acts upon another, it is met by *an equal and contrary reaction*; that is to say, if a body in motion strike another body, the resistance of the struck body is equal to the blow given by the striking body, and in the opposite direction. If I strike a table with my hand, my hand is equally struck by the table. When a horse draws a cart, the horse is as much drawn back by the cart, as the cart is drawn forward by the horse; for the horse exerting the same strength, would have gone to a much greater distance, in the same time, if it had not been impeded by the cart. In playing a game of marbles, where one marble is chucked away by another, that which gave the impulse is itself immediately stopt in its course, by the reaction of the one which it displaces. So also, if two ivory balls be suspended from a beam by threads, in such a manner, that the balls touch each other, and, if one of them be drawn aside, and allowed to fall down upon the other by the force of gravity, the ball struck will immediately fly off to a distance, equal to that through which the other fell; but that which gave the blow will, at the same moment, stand still in consequence of the reaction. If six ivory balls be suspended in the same manner, and one of them be allowed to fall down upon the rest, none of them will appear to move after the collision, except the one which is most remote: for, in this case, the reaction of the second ball, will destroy the motion of the first; the second ball, though it will not appear to move, must strike against the third, and from its reaction be set at rest; and so on, till motion is communicated to the last ball, which, having no reaction to encounter, alone flies off. If, in place of using ivory balls in these experiments, balls of clay, or of any other soft substance, be employed, the result will not be precisely the same, though still equally illustrative of the operation of reaction. If one of these be allowed to fall upon another in the manner formerly described, neither the falling body will by the collision be deprived of all its motion, nor the body struck have all that motion communicated

to it, as in the former case ; but both will move on together in contact, to a distance not so great, as the struck ball did in the former case.—The cause of this difference arises entirely from the difference in point of elasticity, between the ivory and the clay. By *elasticity* is meant that property, by means of which bodies, when compressed or dilated, return to their former state. You have all seen its operation in the case of a bit of sponge or ball of cotton when compressed, and Indian rubber when dilated. Of all bodies air is the most elastic, and hence is distinguished by the name of elastic fluid. Hard bodies are next in point of elasticity. When two balls of metal or of ivory strike each other, the parts at which they touch yield to the stroke, and are pressed inwards ; but, in consequence of elasticity, they instantly return to their former situation, so instantaneously indeed and effectually, as to destroy all trace of their compressed state. Soft bodies, such as clay, butter, tallow, &c., have little elasticity, and liquids least of all. Without an acquaintance with that law of motion, by which action is always accompanied by a contrary reaction, you would be quite at a loss to explain how a bird is enabled to support itself in the air. This is owing entirely to the reaction of the air, when struck by the wings of the bird. If the force, with which the bird strikes the air below it, be equal to the weight of its own body, it will remain stationary ; if it be greater, it will rise ; if less, it will fall.

LAWS OF MOTION—(continued).

IN the last article, we considered the circumstances connected with motion, when occasioned by the operation of a single force once exerted. We are now to turn our attention to those motions, which are produced either by the *incessant exertion* of the same force, or by the *combined exertions* of different forces.—1. If the force, which set a body in motion, do not cease to exert itself at the moment when the body is set in motion, but continue in a state of incessant exertion during the whole of its course, the motion then will not be uniform,

but continually *accelerated*; or, in other words, the velocity of the body will become every moment greater and greater. This will explain to you the reason, why a falling body descends with so much greater velocity at the end, than at the beginning of its fall. This does not arise (as perhaps at first you might be disposed to think) from the circumstance of the body at the close of its fall being nearer the centre of attraction, than at its commencement; because the difference arising from this cause is so trifling, at any small distance from the earth, as to be scarcely perceptible. The cause of the accelerated motion of the falling body is this. When a body falls from a height, the force of gravity, which sets it in motion at the first instant of its fall, would be sufficient to bring it to the ground with a uniform motion, though that force had instantly ceased. But the force of gravity operates, not in the first instant merely, but in every succeeding instant of the body's fall. The force, therefore, which it receives at the second instant, is added to that of the first; and the force, with which it falls in the last instant, is composed of all the forces, which it received in every instant of its fall. It has accordingly been ascertained, that heavy bodies descending from a height, by the force of gravity, fall 16 feet the first second of time, three times that distance in the next second, five times that distance in the third, and so forth in progression, according to the odd numbers 7, 9, 11, &c. Hence the height of a precipice, or the depth of a well, may be measured by the time, in which a heavy body falls from the top to the bottom. Thus, if a stone have taken 7 seconds to descend from a height, that height, according to this mode of calculation, is 784 feet. For it fell, during the first second,

	16 feet.
during the next, 3 times 16 or	48
during the third, 5 times 16 or	80
during the fourth, 7 times 16 or	112
during the fifth, 9 times 16 or	144
during the sixth, 11 times 16 or	176
and, during the seventh, 13 times 16 or	208

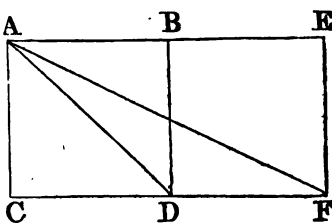
which make up in all	784 feet.
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In all such cases, however, the arithmetical process may be greatly abridged : for if, instead of calculating the height, which the body fell, during each separate second, and then adding the whole together, you multiply the whole number of seconds by itself, and that product by 16, the result will be precisely the same. Thus, in the foregoing instance, if you multiply 7 by itself, the product is 49, and, if you farther multiply that product by 16, the result will be 784 as before.—2. If a body be, at the same instant, acted upon by two equal and opposite forces, as neither of these can prevail over the other, the body will of course remain stationary.—3. If a body be, at the same instant, acted upon by two opposite but unequal forces, it will move in the direction of the stronger force, but with a velocity diminished in proportion to the other.—4. If a body be put in motion by a force which instantly ceases, and be, at the same time, acted upon by an opposite force, which originally is not sufficient to prevail over the other, but continues in constant exertion, the body will have a continually *retarded motion*, or, in other words, its velocity will be every moment diminished ; till, at last, the counteracting and incessant force will completely predominate, and the movement will take place under its influence in the opposite direction. Thus, if a stone be thrown up perpendicularly from the earth, its motion will, in consequence of the force of gravity, be more and more retarded, until at length, in place of ascending, it falls back to the ground in the same line by which it rose. It is a circumstance well worthy of attention, that the stone descends in precisely the same time in which it ascended. It has been proved by experiment, that the force requisite to throw up a heavy body sixteen feet from the earth, will make it ascend so high in one second, which you have seen is precisely the time of its descent. If it were thrown up with greater force, it would ascend higher, and of course would take longer time also to descend ; if thrown up with less force, it would not ascend so high, and would descend the sooner. Hence, we may calculate the height, to which a body has ascended, when projected

perpendicularly from the earth. If an arrow, thus shot up, continue ten seconds in motion, it has, for the reason now assigned, been five seconds on its descent: therefore, according to the method of calculation formerly suggested; multiplying five by itself, we obtain the product 25, and, multiplying this product by 16, we find 400 feet to have been the height ascended.—

5. If a body be, at the same instant, acted upon by two different but not directly opposing forces, its motion will not be entirely in the direction of either, but compounded as it were of both, and the body will accordingly move in a line between the two. Thus, if a body be at once acted upon by two equal forces, one of which would carry it directly south, and the other directly east, it will actually move in a south-east direction. To explain the same thing by a diagram. If a ball, placed at the point A, be at the same moment impelled by two equal forces, one of which, if operating by itself, would, in a second of time, carry it to the point B, in the direction AB, and the other would, in the same time, carry it to the point C in the direction AC, it will move in the direction of the intermediate line AD (which is called a *diagonal*), and arrive in a second at the point D. Let us next suppose the two forces to be unequal, and that the force impelling the ball in the direction AB is double the force impelling it in the direction AC. Here it is plain, that, if the former force had acted alone, the ball would have reached the point E, in the same time that the latter force, if acting alone, would have carried it to the point C, which is only half the distance. Now, when both forces act together, the ball is, in the same time, moved to the point F in the diagonal AF. An attentive examination of the diagram will show, that, in combination, no less than while the forces acted separately, one of them has precisely double the effect of the other. The distance which the ball has moved, from its original situation, by the force impelling it in the direction AE, is obviously twice as great as the distance which it has moved by the force impelling it in the direction AC. It will also be seen,

that the motion, produced by two forces acting together, is not so great as that which is produced by the separate action of each; for the diagonal AF is obviously not equal to AE and EF added together.



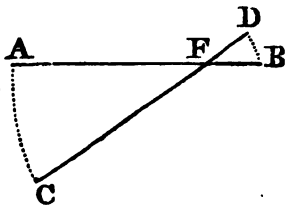
6. Motion in a *curve* line is always produced by the action of at least *two* forces. When a stone is projected from the earth, in any other than a perpendicular direction, it moves in a curve line of a particular description called a *parabola*. You will naturally ask, what *two* forces operate in this case? In truth, the stone is acted upon by no fewer than *three* forces at the same time; namely, the projecting force that set it in motion; the force of gravity that brings it to the ground; and the resistance of the air that impedes its course. The resistance of the air, however, has no effect upon the direction, but only upon the velocity of the body; which moves forward, accordingly, in a direction compounded of that given it by the projecting force, and of that which it receives from gravity. The motion, in this instance, is not (as in those formerly mentioned) in a straight diagonal, because the velocity, which is communicated to the stone by the force of gravity, is not uniform but accelerated; in consequence of which, it falls sooner to the ground than if it had only been acted upon by gravitation once, at the commencement of its course.—*Circular* motion is the result of two forces acting upon one body at the same time, by one of which it is impelled in a straight line, and by the other, is drawn to a fixed point. Thus, when you whirl a stone round in a sling, it is acted upon both by that force, by which, if it were set free, it would fly off in a straight line, and by that which confines it to your hand, and prevents its escape. The former of these is called the *centrifugal* force, and the latter the *centripetal* force. The wings of a windmill, for example, would be driven forward by the wind in a straight line, were they not fixed to a

centre, and so compelled to move in a circle. It is, in like manner, by means of the combined action of a centripetal and centrifugal force, that this earth and the other planets are retained in their orbits. By the force of gravity they are attracted towards the sun: this is their *centripetal* force. By another force, which was given them at the time of their creation, they are all of them propelled in a straight line; this is their *centrifugal* force. Their motion, it is true, is not strictly circular but *elliptical*, arising from other circumstances, which astronomers have now no difficulty in explaining. The point, round which any body moves, is called its *centre of motion*. Thus the sun is called the centre of revolution of the planets. When a body spins round like a top, the line real or imaginary, about which it revolves (which line is not always in the centre of the body) is called its *axis of motion*. Thus, the imaginary line about which the earth performs its diurnal revolution, which occasions the succession of day and night, is called its *axis*.—If two or more bodies move quite round the same centre, at different distances, within the same time, that which is most remote from the centre moves with the greatest velocity, because it is carried round in a large circle, in the very same time, in which the others are carried round only in smaller circles. For the same reason, when a body revolves round its own axis, in proportion to the distance of any part of the body from the axis, the greater is the velocity of that part. You have often seen machines called *roundabouts*, on which children are carried round at fairs; in these (upon the principle which we are now explaining), the children who are placed in the outer seats, get a much longer ride, than those who are placed next the centre of motion. This is a principle, which it will be necessary for you to keep carefully in mind, as it is a fundamental one in the construction of machinery.

MECHANICAL POWERS.

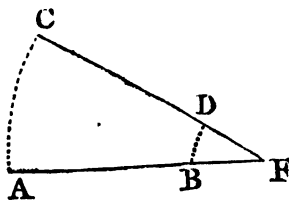
In entering upon the consideration of the mechanical powers, it will be necessary for you to keep in recollec-

tion the leading principle formerly explained, that, by increasing the velocity of a lighter and naturally weaker body, we may render its *momentum* much greater than that of a heavier and stronger one. It is a leading object in machinery, to produce as great a disproportion as possible between the velocity of the moving force, and that of the weight to be moved, and thus to compensate for the want of strength in the former ; so as to enable it to accomplish what either could not otherwise have been done at all, or at least without the greatest difficulty. There are six mechanical powers, one or more of which enter into the composition of every machine,—the LEVER, WHEEL AND AXLE, PULLEY, INCLINED PLANE, WEDGE, AND SCREW.—I. Of these the LEVER is the most simple. It is an inflexible bar of iron, or the like, which, by moving upon a prop or *fulcrum* (as it is called), is of use in raising weights to a small height. Its operation depends upon the principle formerly explained, that where two bodies perform complete revolutions round the same centre, within the same time, that which is more remote from the centre, has proportionally greater velocity than the other. The Lever is of three kinds. The 1st kind is that in which the fulcrum is placed between the weight and the power. It is often used by workmen in the removal of heavy pieces of timber. For this purpose, they force one end of the bar beneath the timber, and resting it upon a block of wood or stone as a fulcrum, they apply their whole strength to the further extremity of it, by which the timber is at length removed. The manner in which this lever operates you will easily understand. Let AB represent a lever of this class, moving upon its fulcrum F, and having its arm AF, to which the force is to be applied, four times as great as its other arm FB, to which the weight is suspended. Then, because the point A is four times as much removed from F, the centre of motion, as the point B, it must have four times its velocity; and accordingly it actually does pass



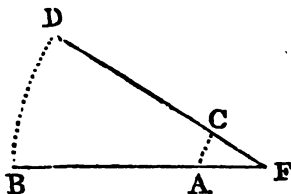
through the larger space AC, in the very same time that B passes through BD, which is only the fourth part of AC; it therefore follows, from what you have learned of *momentum*, that a weight of one pound will have as much force at the point A, as a weight of four pounds would have at B; or, which is the same thing, the strength exerted by a man or a horse at A will have four times the force that the same strength would have at B. It is clear, accordingly, that, by means of this lever, a fourfold force has been acquired. The ordinary balance for weighing goods is generally accounted a lever of this first kind. It is very true that, where the fulcrum is placed in the middle of the beam (as is always the case in a true balance of that kind), no power is gained; because then AF would be equal to FB, and the point A would pass through a space AC just equal to BD, the space through which B moves; and, therefore, in that case the beam does not act as a mechanical force. But, if the fulcrum be placed in any other point of the beam between the two extremities, or if one of the weights be placed at any other point than the extremity, the beam then obviously acts as a lever of the first kind, and affords excellent illustrations of the mode of its operation. Thus, if the arms of a just balance of this kind be each of them divided into the same number of equal parts, an ounce applied to the ninth division from the fulcrum on one side will balance three ounces applied to the third division on the other; and two ounces at the sixth division will balance three at the fourth. In this way you see how a dishonest tradesman may cheat his employers, by using a balance with one arm longer than the other. From what has been said, you will also understand that there may be, and indeed are, two kinds of balances. In the one, various weights are employed; in the other, all articles are weighed by the same weight, but placed at different distances from the fulcrum. Of this last kind is the *steelyard* used by butchers. This is a lever having two arms of very unequal lengths. At the extremity of the shorter arm is suspended the article to be weighed. The longer arm is divided into a number of parts, each of which is equal to the shorter arm. A pound

weight, placed in the first division from the fulcrum of the longer arm, will balance an article of that weight suspended at the extremity of the other; the same weight placed at the 2d division will balance an article of 2 pounds weight; and when placed at the 10th division, for example, will balance an article of 10 pounds weight.—Levers of the first kind are in daily use for a variety of common purposes. Every poker is such a lever, of which the bar of the grate is the fulcrum, the hand is the power, and the coal the weight to be raised. Every pair of scissors, snuffers, pincers, &c., is composed of two levers of this kind acting against each other: in which you will accordingly observe that the longer the handles, and the shorter the points, the less exertion will be required in using them.—The 2d kind of lever, is that in which the fulcrum is placed at one extremity, the power is applied at the other, and the weight to be raised is between the fulcrum and the power. In this lever, the power gained is just so much the greater, as the distance between the point, at which the power is applied, and the fulcrum, is greater than the distance between the point at which the weight is suspended, and the fulcrum. Thus let AF represent a lever of this kind, having its fulcrum at the extremity F, and a force applied at the other extremity A, for the purpose of raising a weight suspended at B between the other two points. Thus, because the point A is four times as much removed from F, the centre of motion, as the point B is, it has four times its velocity, and passes through the larger space AC, in the very same time that B passes through the space BD, which is only a fourth part of AC; and therefore a weight of one pound placed at A will have as much power as four pounds at B. When



you raise up, at one end, a bench, upon which a person is sitting, it acts as a lever of the second kind; so that, if you apply your strength to the farther ex-

tremity, you raise it with much more ease, than if you were to attempt to raise it at a part of the bench, more nearly approaching to that on which the person sits. Every door, too, or shutter, which turns upon hinges, is an example of this species of lever, of which the hinge is the fulcrum: here, also, you will close the door with more ease, by applying your strength to the farther end, than by applying it to any part of the door nearer the hinge. The oar of a boat is also a lever of this kind, having the water for a fulcrum. A pair of nutcrackers is a double lever of the same kind, having the fulcrum at the hinge.—The 3d kind of lever is that, in which the fulcrum is placed at one extremity, the weight to be raised at the other, and the power between them. In this case there is an evident *loss* of force by the position of the power. Thus let BF represent a lever of this kind having the fulcrum at F, the weight to be raised suspended at B, and the force applied at A. Here it is evident that the point A moves with only a fourth part of the velocity of B, and consequently that it will require a weight of 4 pounds at A to balance a weight of 1 pound at B. You may believe that the power is never so placed except in cases of absolute necessity, as for example, in raising a ladder against a wall. Anatomists have shown that the lower part of the human arm is a lever of the third kind, having the elbow for the fulcrum: and though, by such an arrangement, force is obviously lost, this is far more than counterbalanced by other most important advantages.

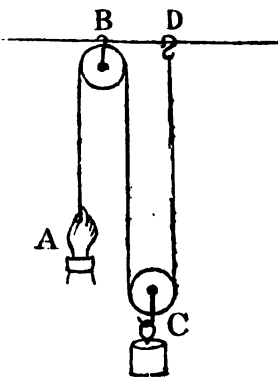


MECHANICAL POWERS—(continued).

II. The second Mechanical Power is the **WHEEL AND AXLE**, by which weights are raised to a far greater height than by the lever. Upon the principle formerly ex-

plained, that every part of a revolving body moves with a velocity proportioned to its distance from the axis, it must be quite plain that any point of the circumference, or outer rim, of a wheel, moves with greater velocity than any point of its axle; and consequently that a force applied to the wheel has more power than the same force applied to its axle, in proportion as the circumference or diameter of the wheel is greater than that of the axle. If the diameter of the wheel be ten times that of the axle, any force applied to the wheel will have the same power, as ten times that force applied to the axle. You have probably seen water drawn up from a deep well, by means of a bucket fastened to a rope, which coils round a slender revolving cylinder (or bar) of wood or iron, that is put in motion by force applied to a handle affixed to the extremity of it, like the handle of a common roasting-jack, or of a hand-mill, or the key frequently used for a watch. Here it is evident that the man's hand, which is applied to the handle, moves round a wide circle in the same time that each point of the cylinder, round which the rope is coiled, describes only a small one; and that power accordingly is gained in proportion as the circle described by the hand, is greater than the circumference of the cylinder. Had the same force been applied to the cylinder itself instead of the handle, the bucket might not have moved at all. Hence, too, the difficulty of drawing up the bucket is continually increased, as one part of the rope coils round another, for this obvious reason, that the difference between the circle described by the hand and that described by the rope is proportionally diminished. The more you increase the length of the handle, and consequently enlarge the circuit of the hand, the more of course you increase the force. But a very long handle of this kind would be extremely inconvenient; and therefore, when considerable force must be employed, recourse is had to a wheel with cogs or spokes sticking out from it, by which it is impelled. Various other inventions upon a similar principle have been devised under the name of capstans, windlasses, &c. such as you may have seen on board ships or on wharfs. Sometimes the wheel is moved by a man or several men placed in

the inside, who walk on bars as if going up stairs, by which the wheel is moved, just in the same manner as you may have seen squirrels or other animals make their cages revolve. This is very hard labour, which has accordingly given rise to the introduction of the tread-mill into houses of correction.—III. The next mechanical power is the **PULLEY**. You have seen pulleys fixed in a wall for the purpose of drawing up curtains, bird-cages, &c. These fixed pulleys are often very convenient, in changing the direction of a power, and enabling us to elevate a body to a considerable height, without putting us under the necessity of ascending thither along with it. But this is all the advantage *they* confer. They give no increase of power. The hand, which draws the weight, moves with no greater velocity than the weight itself: and accordingly to balance each other, the power and the weight must be precisely equal. It is quite different however with regard to the *moveable pulley*, by which we mean one that, besides revolving round its own axis (as is the case with all pulleys), moves along with the weight. By means of one of these pulleys, the power is doubled, and by a combination of them may be greatly multiplied. Let C represent a moveable pulley, and the line ABCD a rope, one end of which is fixed to a hook at D, and the other passes over the fixed pulley B, placed there merely for the purpose of altering the direction of the rope: a weight of one pound suspended at A will be sufficient to balance two pounds suspended from the moveable pulley C. Here you will observe that the power at A has not to support the whole weight suspended from the moveable pulley; for one half of that weight is borne by the other end of the rope fixed at the hook D.



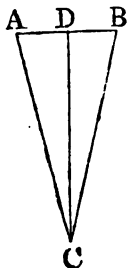
When the rope is set in motion, it will be found that the power at A moves with just double the velocity of the moveable pulley and weight attached to it : because, when the pulley has been raised one inch, the parts of the rope BC and CD will *both* have been shortened one inch ; therefore two inches of rope altogether must have passed over the fixed pulley, and the power at A must have advanced two inches in the same time that the weight suspended at C has advanced only one inch. When several of these moveable pulleys are combined, a still greater power is acquired. Thus a power of one pound is by means of two of these pulleys, enabled to support a weight of four, and by means of five of them, is enabled to support a weight of ten. Such combinations of pulleys you may see employed in cranes for raising goods into warehouses, and aboard ships to raise the sails. The principal objection to pulleys is, that, in consequence of friction, they lose so much of their natural power. By *friction* is meant that obstacle, which bodies encounter in their movements, from rubbing against each other. It may here, once for all, be remarked, that it more or less affects our calculations with regard to the power of all kinds of machinery, as well as of the pulley.—IV. The fourth mechanical power is the **INCLINED PLANE**, by which is meant nothing else than a slope or declivity, employed in order to render the ascent of a heavy body easier, than it would have been in a perpendicular direction, when exposed to the full operation of the force of gravity. Of the application of this power, you may see daily instances, in the sloping planks, which are laid for the purpose of lowering or raising packages to or from warehouses below the level of the street. The principle upon which the inclined plane operates, differs from that of the other mechanical powers, which have already been explained, but is no less obvious. No body, when laid on a declivity, will fall with the same velocity, as when descending freely through the atmosphere. You have perhaps all seen a kind of table, which, for the purpose of occupying less room when unemployed, is made to fold back by means of a hinge upon its pedestal.

Lay a round body, as for example a marble, upon this table, when in its horizontal position (that is to say in the position in which it is ordinarily made use of), and the marble will remain quite stationary; slope the table a little out of its horizontal position, and the marble will roll off; slope it still more, and the marble will roll off with increased velocity; turn it down altogether, and the marble will descend with all the velocity communicated by the full force of gravity. From what has been said, it is clear that a body will roll down the declivity AC with less velocity than it would fall in the perpendicular AB; and that, in like manner, it would roll down AD with less velocity than it rolls down AC. For the same reason, it will require less force either to sustain it on the declivity AD or to make it ascend that line, than would be necessary with reference either to AC or AB. The power gained, accordingly, by the use of the inclined plane, is in proportion as the length of the declivity exceeds its height. Thus because AC is twice the length of AB, and AD is three times the length of AB, a single pound weight, suspended in the air at A, will be sufficient to sustain two pounds laid on the slope AC, or three pounds upon AD. In actual practice, however, much allowance must be made for the effect of friction. Chisels, and other sharp instruments

A
sloped down to an
edge on one side
only, are accounted
to act on the principle
of the inclined
plane.

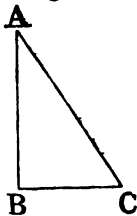
V. The fifth mechanical power is the **WEDGE**, which is a piece of wood or iron, having a sharp edge, and growing continually thicker towards the base, employed by workmen for the purpose of cleaving timber, rocks, &c. Let ABC represent the surface of this implement. It is obvious that it consists of two inclined planes, meeting at the point C, and united at the base AB. The point C is inserted into the body to be cleft, and, by means of violent blows of a hammer upon the

base AB, the whole wedge forces its way. It is generally understood, that the wedge acts upon the principle of a double inclined plane. The less the breadth of the base AB is, in proportion to the length of the two sides AC, BC, the greater is the acquired power. It is calculated accordingly in theory, that, if AC and BC, taken together, be four times the length of AB, or, which is the same thing, if AC be four times the length of AD, the half of AB, the power will be equal to four times the resistance; and if the wood cleave at a distance before the wedge (which is the case with most kinds of timber), the advantage acquired is computed to be still greater. But, in truth, where there is so much friction, it is difficult to attain a precise calculation upon the subject. Hatchets and chisels, and other sharp instruments, having both edges sloped, act upon the principle of the wedge. So also does the knife, in so far as it is used to split; but it acts also upon the principle of a fine saw, and therefore



it is that it is drawn backward and forward across the body to be cut. It has justly been remarked, as one of the many proofs of wisdom displayed in the Creation, that the beaks of birds are formed in the shape of wedges, for the purpose of enabling them to dig into the ground, or into the bark of trees, and to break the shells of fruit.—VI. The last mechanical power we have mentioned is the *screw*. It consists of two parts, the *screw* more properly so called, and the *nut*. The *screw* is a cylinder with a spiral protuberance, which is called its *thread*, apparently coiled round it in the same manner as the ivy twines round the oak, or a serpent twists itself round a pole. From this last circumstance the thread sometimes receives the name of a *worm*. The *nut*, which is the weight to be moved, is generally a heavy piece of iron, with a hole perforated in the centre, which is so grooved as to accommodate itself to the spiral twistings of the screw, upon which the nut

moves. To the nut there is affixed a handle, which handle and nut taken together are called a *winch*. The screw acts upon the principle of an inclined plane, by which the body, in place of rising in a straight line, gradually ascends by a spiral curve to the top. Cut a piece of paper in the shape of the triangle ABC, of which the side AC obviously represents an inclined plane; apply the side AB to a stick or other cylinder, and wrap the paper round it; and you will see at once that the line AC representing the inclined plane, has become the spiral of a screw.



The closer the parts of the thread are to each other, the more is the advantage gained by the screw. The operation of this power will, I think, be well understood by the following familiar illustration. If, in place of attempting to ascend a high hill in a straight and perpendicular direction, we make use of a path, which winds spirally round the hill till we reach the summit, our ascent, as every one knows, will be rendered much easier: and this facility will be more and more increased, as the different parts of the winding path approach more closely to each other.—Hitherto we have only considered the operation of that part of this mechanical power, which is more properly called the screw. You will, however, at once perceive, that the handle also acts as a lever, and that in proportion as its length is increased greater power is acquired. The power of a screw therefore may be augmented, either by diminishing the distance between the parts of the thread, or by lengthening the handle. This mechanical force is employed by bookbinders and printers, and in the manufacture of wine, cider, and sometimes cheese, &c.

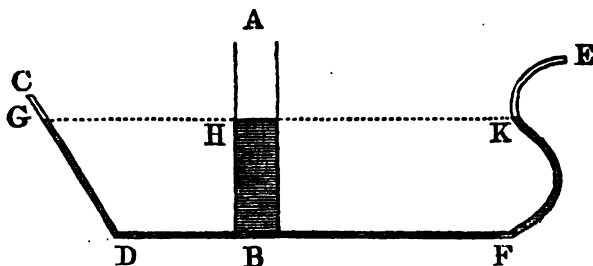
MECHANICAL PROPERTIES OF FLUIDS.

A *FLUID* is a body, the particles of which yield to any impression, and are easily moved among each other. This defective cohesion, among the particles of fluids,

has been explained by some philosophers upon the supposition, that these particles are not only small but smooth and round.—Fluids are of two kinds; what are called *non-elastic fluids* or *liquids*, such as water, oil, quicksilver; and *elastic fluids*, such as the atmospheric air, vapours, and gases of every description. It is the mechanical properties of *liquids*, that are to form the particular subject of the present article. Liquids are very little susceptible of being compressed into a smaller bulk than their natural state. A striking illustration of this was, on one occasion, supposed to be given, by means of a celebrated experiment made at Florence; in which a hollow globe of gold, being filled with water, and subjected to a very strong pressure, the water was seen to escape through the pores of the gold, and to cover the external parts of the globe with moisture. By other experiments, however, it has been shown, that liquids are not altogether unsusceptible of compression; and some doubts have even been expressed with regard to the accuracy of the Florence experiment. The pores of liquid bodies are too minute to be visible, but that these bodies are porous appears from the experiments last mentioned, as well as from other circumstances.—In consequence of the attraction of cohesion operating less strongly in liquids than in solids, gravity, on the other hand, in the former, has a more perfect operation. We have seen that in solids, when a single point, called the centre of gravity, is supported, the whole body remains stationary, and that a huge mass of rock may project without being brought to the ground by the force of gravitation. In liquids, however, the prevalence of cohesion over gravity can only happen to a very limited extent. That it *does* happen, indeed, every hanging drop of water is a proof. But it is quite obvious, that, while gravity acts upon a solid body as one collective mass, it has a more independent operation upon each individual particle of a liquid body. Hence it is that a liquid always finds its level, and maintains a smooth and horizontal surface. For if, by any accident, one particle be, for a moment, raised above the others, it immediately, by the force of gravity operating separately upon itself, is brought down to the

surface of the fluid; and, from the readiness, with which the other parts make way for its reception, becomes incorporated with the liquid mass. All the particles of a liquid body, in consequence of this independent gravitation, press against each other not only downwards, but also laterally or sideways, and even upwards. Were there no lateral pressure in liquids, why is it that we every day see water run out of a vessel, when an opening is made in one of its sides? This lateral pressure, no less than that directly downwards, is the result of gravity, and is occasioned by the superior particles, in their attempt to descend, forcing aside those beneath them. If you conceive three particles of a liquid to be thus arranged $\begin{bmatrix} \circ \\ \circ \circ \end{bmatrix}$, the superior particle, in its descent, will obviously make way for itself, by forcing the two others aside. As the lateral pressure of liquid bodies is thus the result of gravity, and of the consequent downward pressure of the superior particles, it follows, that the lower an opening is made in the side of a vessel containing such a body, the greater in proportion is the pressure, with which the water is forced out; and this circumstance is not at all affected by the breadth or width of the vessel. Take a vessel of whatever shape you please; it matters not whether it be quadrangular, or cylindrical, or conical; and make openings in it at different heights; any liquid, contained in the vessel, will issue from each of these openings, with a force proportioned to its distance from the top of the vessel; so that it will be discharged much more rapidly by the lowest orifice, than by any one at a greater height. The reason is obvious. At the lower orifice the fluid is forced out by the weight of the whole column of particles above it, while, at any higher orifice, it is pressed only by the column above that orifice, which is plainly no more than a part of the column that presses at the lower one. But we said that the particles of liquids have a pressure not only downwards, and sideways, but also upwards. If into an opening, made in the side of a vessel filled with any liquid, a tube be inserted, like the spout of a teapot, sloping upwards, the liquid will immediately ascend in the tube, till it stand at the same height with the sur-

face of the liquid in the vessel. This, however contradictory it may appear to the doctrine of gravitation, is in truth an additional illustration of it, as it is the consequence of the pressure from above which immediately causes the fluid to issue at the only outlet left for its escape. This pressure operates equally at the same point in all directions, and so enables the fluid to retain its level. Let AB, CD, EF, represent three tubes left open at top, of which one is placed vertically, one in an inclined position, the third is of a curve figure, and all are connected by a horizontal tube DF. If water be poured into these tubes, it will rise to the same level GHK in all of them. It matters not what is the shape, or length, or diameter of the tubes, or how different they may happen to be from each other in all these respects. Though AB, for example, were a capacious vessel of vast dimensions, and the others only slender tubes, the result would be precisely the same; the water would stand as high in AB as in the other tubes; and it will rise no higher. By pouring water into the tube CD, you will in vain attempt to fill the higher vessel AB to the top: as soon as it has reached its level, the water, in place of continuing to rise will overflow at C, because a fluid will not rise above its source. If oil had been poured



into any of the tubes, it would have stood higher than the water would have done in the other tubes, because oil is lighter than water. If, on the other hand, quicksilver had been poured in, it would have stood a great deal lower, because it is so much heavier than water.—The principle, that a fluid will always find its

own level, is one of the greatest practical importance. It is by a knowledge of this law of nature, that we are enabled to bring water from a great distance in pipes, and distribute it over a whole town, not only in the lower, but in the upper floors of the houses, provided they be not above the level of the surface of the water in the reservoir from which it emanates. From ignorance of this principle, or of the mode of its application, the ancients thought themselves under the necessity of erecting magnificent and costly aqueducts, over which the water was conducted.—The effect of fluids upon *floating bodies* shall be noticed in the next article upon *specific gravity*.

SPECIFIC GRAVITY.

It is a consequence of the pressure of the particles of a fluid, that any lighter body immersed in it is borne up to the surface, a body of equal weight floats in it, and a heavier one is retarded in its descent by the resistance of the fluid depriving the body of part of its gravity. In consequence of this resistance, every body suspended in water loses as much of its weight (which it had when weighed in air), as is equal to the weight of the quantity of water which it has displaced. From what was formerly said on the subject of the impenetrability of bodies, it is also plain that every body which sinks in water displaces as much of the fluid as is equal to its own bulk. It is bulk alone, not weight, which is in this matter to be considered. A cubic inch of the heaviest metal will evidently displace no more of the fluid, than a cubic inch of the lightest substance. These properties of fluids have been found of great service in ascertaining what is called the *specific gravity* of bodies. A pound of lead, every one is easily brought to acknowledge, is just equal in weight to a pound of feathers; and a very large quantity of water has greater weight than a very small quantity of quicksilver. Still, however, we say that the *specific gravity* of the lead is greater than that of the feathers, and the *specific gravity* of the water less than that of the mer-

cury. Two substances are said to have an equal specific gravity, when a quantity of the one has precisely the same weight with a quantity of the other *of the same bulk*. On the other hand, if a cubic inch (for example) of one substance weigh more than a cubic inch of another, the former is said to have a greater specific gravity than the other. You will readily perceive that it must be an extremely useful thing to adopt some one substance as a standard, by which the specific gravity of all others may be compared. Now the properties we have been considering, as well as some other circumstances connected with water, have led to its general adoption for this purpose. Its use in this way is said to have been originally suggested to an ancient philosopher of the name of Archimedes, by an incident as familiar, and apparently as little likely to lead to any philosophical discovery, as the apple which our Newton saw fall in his orchard. Hiero, the king of Syracuse, had put into the hands of a workman a certain quantity of gold, of which he was to make for him a crown. When the crown was finished and given to the king, he had reason to suspect that his gold had been improperly adulterated, and applied to Archimedes for his assistance in detecting the imposture. After many attempts for this purpose, the philosopher was about to abandon the object altogether, in despair of being able to accomplish it, when the fortunate incident occurred, to which we have alluded. Stepping into the bath one day, as was his custom, he happened to observe, that the water rose as he plunged into it, and that it did so in proportion to the bulk of his body. He immediately perceived, that any other body of the same bulk would have raised the water equally, but that one of equal weight, if of less bulk, would not have produced so great an effect. To his discerning mind this train of thought suggested a solution of the question, which he had undertaken to solve to the king: and he was so overjoyed, that he is said to have run into the street, just in the state in which he leaped out of the bath, exclaiming, "I have found it out; I have found it out." He now got two masses, one of gold and the other of silver, each of equal weight with the

crown, and, having filled a vessel very accurately with water, plunged into it first the silver mass, and marked the quantity of water which overflowed. Next he plunged the gold mass, and found that a less quantity now overflowed than before. Hence he inferred that, though the masses were equal in point of weight, the bulk of the silver was greater than that of the gold. He then plunged the crown into the water, and found that it displaced more of the fluid than the gold had done, and less than the silver, which led him to infer and report to the king, that it was neither pure gold nor pure silver, but a mixture.—In order to ascertain the specific gravity of a body which sinks in water, it is in the first place weighed in air; it is next weighed in water, and the weight which it now has in water is subtracted from that which it formerly had when weighed in air; the difference between these two weights shows *the weight of the water displaced by the body*, because we have seen that every body, when weighed in water, loses weight exactly equal to that of the water displaced: and therefore it is quite plain, that, by dividing the weight of the body in air, by the difference between that weight and its weight in water, we ascertain how many times the weight of a certain bulk of water is contained in the weight of a similar bulk of the substance which we are weighing; or, in other words, we determine the *specific gravity* of that substance. Thus, if we find that a stone weighs in air 600 grains, and in water only 400, we know that a quantity of water, equal in bulk to the stone, would in air weigh 200; and dividing the weight of the stone in air (600) by the weight of the water (200), we find the stone to be three times heavier than the water. If then we call the specific gravity of water 1, the specific gravity of the substance which we have been weighing is 3. If we call the specific gravity of water 1000, the specific gravity of the substance is 3000. It evidently matters not in this inquiry, whether you call the specific gravity of water 1, or 1000, or any other numerical denomination, for the object of the inquiry is not to ascertain the actual weight of any particular quantity of the substance, but only its *specific gravity*;

or, in other words, what proportion the weight of any bulk of this substance bears to the weight of a similar bulk of water. When, indeed, we have found the *specific gravity* of any substance, it becomes a very easy matter to calculate the weight of any given bulk of it, as the weight of a cubic foot of *water* is exactly 1000 ounces; and therefore, if the specific gravity of water be accounted 1000, the number which denotes the specific gravity of any other substance, denotes also the number of ounces in a cubic foot of that substance.—In order to ascertain the specific gravity of a substance, which will not by itself sink in water, some heavier body must be attached to it, of which the weight, both in air and water, had previously been ascertained, and the difference marked; the bodies thus attached are weighed together, first in air, and afterwards in water, and the difference found; from this difference is subtracted the difference between the weight of the heavier body in air and water, and thus is obtained the weight lost by the lighter body in water; by which its weight in air must be divided, in order to ascertain its specific gravity. Thus, in order to find the specific gravity of a light wood, of which I have a portion weighing five ounces, I must attach to it a body of greater specific gravity, as, for example, a stone. I find that the stone which I employ, weighs 12 ounces in air, and only 6 ounces in water, making a difference of 6 ounces. I find that the stone and wood, when attached, weigh 17 ounces in air, and only one ounce in water, making a difference of 16 ounces. From this difference (16) between the weight of the attached bodies in air and water, I deduct the difference formerly found (6), between the weight of the heavier body in air and water, and thus obtain the difference (10) between the weight of the lighter body in air and water. By this, difference (10) I divide the weight of the lighter body in air (5), and thus find the specific gravity to be $\frac{1}{2}$, if that of water be accounted 1: or 500, if the specific gravity of water be accounted 1000.—The specific gravity of a fluid may be found by ascertaining first the difference between the weight of a bottle, when filled only with common air, and when filled with water, by

which the weight of the water is found: then ascertaining the difference between the weight of the same bottle, when filled with common air only, and when filled with the fluid, whose specific gravity we wish to ascertain, by which the weight of the quantity of the fluid in the bottle is found; and thus the proportion is easily calculated between the specific gravity of the water, and the other fluid. If, for example, the other fluid in the bottle has been found to weigh twice as much as the water, its specific gravity is obviously just double that of water. In practice, however, recourse is generally had to an instrument called a hydrometer, for the purpose of ascertaining the specific gravity of fluids. This instrument is so constructed, that the specific gravity of the liquid is estimated by the depth, to which the hydrometer sinks in it. The farther this instrument sinks, the lighter is the specific gravity. It is upon a similar principle, that, in order to ascertain the strength of brine for salting meat, it is not uncommon to place an egg in the boiling water, and continue to put salt into it until the egg swim.

MECHANICAL PROPERTIES OF AIR.

AËRIFORM fluids differ from liquids principally in respect of the superior elasticity of the former, which hence are distinguished by the name of *elastic fluids*. Atmospheric air and all the various kinds of gases are of this description. They differ from each other in their chemical properties: but the *Mechanical* properties of all elastic fluids are the same. Though the air, by which we are continually surrounded, and without which we would cease to live, is invisible to the eye, its presence is sufficiently manifested by its effects. By the motion of a lady's fan you immediately feel that you have put it in agitation; by briskly moving a switch you hear its sound; in pushing the rammer of a child's pop-gun, plugged at the opposite extremity, you feel its resistance; by immersing a phial under water, you see the bubbles, which it forms in making its escape. We are now to consider some of its leading mechanical

properties.—1. Air is *compressible*, that is to say, may by pressure be made to occupy less room than in its natural state. Thus, we had formerly occasion to remark, that, in discharging a pop-gun, the rammer, in consequence of the compression of the air in the tube, is able to advance a little way before it expels the plug ; and that, when a wine-glass is immersed with its mouth downwards in a vessel of water, the water will, from the same cause, ascend to a small height in the glass.—2. Air, as we have said, is remarkably *elastic* : that is, after being compressed, it, as soon as the pressure is removed, resumes its former dimensions. Squeeze a blown bladder, and, whenever you remove your hand, it immediately regains its original bulk. Throw it on the ground, and the elasticity of the air pent up in it will display itself, by the force with which it rebounds. It is obviously by means of this quality, that it makes so excellent a football.—3. Air, like every other fluid, is *heavy*, and *presses equally* in all directions. From the equality of the pressure upon all bodies, and upon all parts of the same body, it is not easily felt or perceived ; but, whenever it is partially removed from a body (which is easily done by an instrument called an air-pump), then its effects upon the other parts of the body are clearly discerned. Thus, if the air be exhausted from the inside of a glass vessel called a receiver, the vessel will be held quite fast by the pressure of the external air. So, also, if you completely fill a wine-glass with water, and cover it with a piece of paper, then place the palm of your hand over it, so as to hold it quite tight and accurately even ; you may afterwards turn it upside down, and remove your hand from the paper, without spilling a single drop of water. For the same reason, a small phial with a narrow neck retains a liquid within it, even when its mouth is turned downwards. Upon the same principle, take a common teacup, and burn some paper in it, by which the air within it will be made to expand ; invert the cup in a saucer containing water ; when the air cools it will return to its former density, and thus leave within the cup what philosophers call a *vacuum*, that is to say, an empty space containing no air ; in consequence of which

the pressure of the external air from below will force up a great portion of the water into the cup to fill up the void. These instances will be sufficient to illustrate the *upward* pressure of the air; its *lateral* pressure (that is to say, its pressure sideways) is no less easily shown by means of the air-pump. If we place a bladder, containing very little air, under the receiver of the pump, having previously tied the neck of the bladder quite close; so soon as the external air is exhausted, the air within the bladder will immediately distend itself in a surprising manner; but, on the re-admission of the external air, will resume its former state. You will find an amusing experiment of this kind mentioned in the "Conversations on Natural Philosophy," by which a shrivelled apple was, under the receiver, rendered quite plump and apparently fresh. It is in consequence of the *downward* pressure of the atmosphere (as was formerly explained to you), that its lower strata are so much denser than the higher. The difference in this respect is very considerable between the atmosphere at the top of a high mountain, and in the valley below. The density of the atmosphere at its different heights, and in its different conditions, is determined by an instrument called a **BAROMETER**, of a very simple construction. For this purpose, a glass tube of about three feet in length, and open only at one end, is filled with mercury; then the open end, being in the mean time stopt with the finger, is immersed in a cup containing some mercury: part of the mercury in the tube falls into the cup, but only a part, the remainder being supported by the pressure of the air from below; because, as you will remember, there is no counteracting pressure from above, the tube being completely shut out at the top from all communication with the atmosphere. The denser the atmosphere is, the more strongly it presses upon the mercury, which accordingly rises higher in the tube. When the atmosphere is dense, it generally carries up the clouds to a greater height, and we are then led to expect dry weather; when it is rare, the clouds descend, and rain or snow naturally follows. Hence the barometer acts as a weather-glass, and very often receives that name. In consequence of the

greater density of the atmosphere in the lower regions, than in the higher, it is far better adapted to the condition of man. The rarity of the air above has been found productive of great inconvenience to those, who ascend high mountains or in air-balloons, by producing great difficulty of breathing, bleeding at the nose, &c. —The atmospheric air is 800 or 1000 times lighter than water; but, from its great height (being supposed to extend at least forty-five miles from the earth), its pressure upon the earth's surface, you may believe, is extremely great, and is computed at fifteen pounds upon every square inch. A man of ordinary size, therefore, sustains a weight of no less than fourteen tons. You may, perhaps, be surprised to think how little so heavy a pressure is felt by us, or impedes our movements. This is owing to its equal influence upon all parts of the body, external and internal, at the same time. Such is the internal pressure, that, were the external pressure removed, the body would in a moment be blown up. When the pressure is removed from any part of a body, its pressure upon the other parts then becomes quite perceptible. It is from this cause that, in the surgical operation of cupping, the swelling of the part under the cup is produced.

ON THE GENERAL EFFECTS OF HEAT.

THE word **HEAT** is used in two significations, being sometimes employed to denote a well-known sensation, and sometimes the cause of that sensation. Thus we speak both of the heat of a fire (to which some chemists, by way of distinction, give the name of *caloric*), and also of the heat which we feel on approaching a fire. It is in the former sense, as expressive of the cause of the sensation, we mean at present to employ the term. This **HEAT** (regarding the nature of which philosophers themselves are not agreed) is produced in bodies, not only by direct communication from others which had previously been heated, as when you apply a lighted paper to a candle, but also by *percussion*, as when you hammer a bar of iron; by *friction*, as when you

rub two pieces of wood against each other ; and by *attrition*, as when you strike a flint with steel. Its general effects, besides the sensation already alluded to, which it produces on animated beings, are **EXPANSION, LIQUEFACTION, VAPORIZATION, and INCANDESCENCE.**—**I. EXPANSION**, or enlargement of bulk, is produced by the addition of heat in almost all bodies, whether solid, liquid, or *aëriform*. Throw a bar of iron into the fire, and you will find it increase, not in one of its dimensions only, but in all : it will become longer, broader, and deeper. Hold a tube containing spirit of wine over a fire, and the liquor will rise in the tube, in consequence of its expansion. In like manner, hold over a fire a bladder nearly filled with air, and the bladder will, from the expansion of the air, be distended. In none of these cases does any increase of gravity accompany the increase of bulk ; and, in all of them, so soon as the heat is removed, the body returns to its former dimensions. Some bodies expand by heat much more than others. Thus, if we put water into one tube, and spirit of wine into another of precisely the same description, and apply equal heat to both, the spirit of wine will rise much higher than the water.—The expansion of bodies by heat led to the invention of **THERMOMETERS**, which enable us to ascertain the state of temperature, by the rise or fall of a fluid contained in a very slender tube. The fluids found most convenient for this purpose are spirit of wine and mercury, but particularly the latter. The precise extent of its rise or fall is marked out by a scale divided into degrees. In order to make all thermometers correspond with each other, it was obviously necessary that their scales should be rendered uniform. For this purpose it was of importance to discover some fixed points, which should indicate certain conditions of temperature. It was found, that, if a thermometer be immersed in melting snow, the fluid contained in it always stands at precisely the same point. It was also found, that, if it be immersed in boiling water (when the pressure of the atmosphere is in its ordinary state), the fluid always stands at the same point. These two points, the freezing or melting point, and the boiling point, were quite sufficient for

the purpose in view. The interval between them could then be easily divided into any number of equal parts, called degrees. Fahrenheit (whose thermometer we generally use in this country) divided this interval into 180 degrees. He did not, however, commence his scale at the freezing point. He selected a third point for this purpose. Erroneously thinking that there could be no greater degree of cold, than that which was indicated by the thermometer when immersed in a mixture of snow and salt, which is 32 degrees below the freezing point, he fixed upon this as the commencement of his scale. His freezing point accordingly is 32, and his boiling point 212. You must not imagine, that, whenever you see a body shrink in its dimensions by the addition of heat, this is to be considered as an exception to the general law of expansion. This effect is in most cases occasioned by the loss of moisture by evaporation; whereby the body is deprived of a part of its substance, and consequently of its weight. There is however a peculiarity with regard to clay, which continues to shrink even after it has ceased to lose weight by evaporation. It is remarkable, also, that water and some other substances, such as iron, sulphur, &c. at the moment of freezing, in place of contracting by the diminution of heat, expand in consequence, as is now supposed, of the new arrangement of the particles, in passing from a liquid to a solid form. The force, with which water, in this situation expands, is amazing. A cannon, on one occasion, having been completely filled with water, and closed at the mouth, was exposed to a cold temperature; when the water began to congeal, it expanded with such force as to burst the cannon. It is in consequence of this expansion, that large masses of rock are, in time of frost, so often separated from the cliff. It also accelerates the decay of old buildings. Water expands, not only when actually congealing, but at a temperature several degrees above the freezing point. Thus, if water be cooled in a tube well adapted to exhibit the change of bulk, it gradually contracts according to the general law, until the temperature has fallen to the fortieth degree of our thermometer; if cooled farther, it continues to expand until it freezes.—II. We have

already seen that, when heat is added to a body, it first expands in bulk ; if more heat be added, then LIQUEFACTION or fluidity takes place ; that is to say, the body, from being a solid, passes into the form of a liquid. In some bodies the transition from the solid into the liquid state is immediate, as in ice, silver, copper. In others, it is gradual, as in wax, tallow, iron, which are first soft, and then viscid, before they become entirely fluid. If you reduce the temperature of the body thus liquefied, it resumes its solid form. The point of temperature, at which liquefaction takes place, is very different in different bodies. Some solid bodies, such as wax, become liquid at a temperature not much higher than that of the medium state of the atmosphere. Ice melts, as we have seen, at 32° of our thermometer. Frozen quicksilver melts at 40° *below zero* or 0. Because we are accustomed to see some bodies solid, when in the ordinary state of temperature, and others fluid in that state, they hence receive the name of solids or of fluids. Thus we call water a fluid, and iron a solid. But you will now understand, that every body is either solid or fluid, according to its state of temperature at the time. Some bodies, indeed, we have never seen in a solid state, and others we have never seen in a fluid state, because *we* are not able to produce the temperature, which will bring them into these states respectively. But they are all to be regarded as capable of being brought either into a solid or a fluid state, by production of the necessary temperature.

ON THE GENERAL EFFECTS OF HEAT—*continued.*

THE third general effect of heat is VAPORIZATION ; or the conversion of a solid or liquid body into vapour or aëriform fluid, as is the case when water is, by addition of heat, made to boil. Most bodies pass first from the solid into the liquid, and from the liquid into the aëriform state : but some pass directly from the solid state into vapour. The temperature, at which evaporation takes place, is very different in different bodies ; water boils at 212° ; quicksilver at 655° . Bodies, which pass into this state at a low temperature,

are called *volatile*; those, which require a very high temperature for this purpose, are said to be *fixed*. There are some, which are always seen in an *aëriform* shape, and cannot be condensed by any cold which we can produce: these are generally called *airs* or *gases*. Those substances, which may be easily restored to their condensed form, are generally distinguished by the name of *vapours*. There is, however, no difference between *gases* and *vapours*, except in so far as regards the temperature, at which they change their form. Both would be condensed, if we had it in our power to reduce them to the necessary temperature. There are some substances, on the other hand, such as iron, which we have never known in an *aëriform* shape: there can be as little doubt that they are convertible into *vapours*, if we could raise them to the necessary temperature. Every body therefore, is either solid or *aëriform*, just according to its temperature at the time. In passing from a liquid into an *aëriform* state, as every one knows, a movement generally takes place in the liquid, to which we give the name of *boiling*. This motion is now satisfactorily ascribed to the formation of vapour in the lower part of the fluid, which, ascending to the top, produces this agitation. Boiling however is by no means essential to vaporization: because, if the heat be applied above, in place of below, vapour will be produced without boiling.—The transition of bodies into vapour is much affected by *pressure*, which greatly impedes the repellent force of heat in overcoming the cohesive attraction. The same fluid will boil at very different temperatures, according to the pressure of the atmosphere at the time. If this pressure be entirely removed, boiling will take place at a temperature more than 100 degrees below the usual boiling point. A very amusing experiment connected with this subject is exhibited in the Chemistry Class. Water is put into a glass flask and held over the fire till it boils; the flask is then closely corked and removed from the fire, and the water still continues to boil for a long time: the cork is afterwards drawn, and the boiling immediately ceases. The reason of this is, that the vapour of the water expels the atmospheric air;

then, upon the removal of the flask from the fire, the vapour itself condenses, by which the water is deprived of its pressure, and thus boils at a low degree of temperature; when the cork is drawn, the atmospheric pressure is restored, which puts an end to the boiling. If, while the flask is corked, it be immersed in *cold* water, the water within it boils violently; take it out of the cold water, and immerse it in *warm* water, the boiling ceases. This apparently strange phenomenon is easily explained: the cold water condenses the vapour and thus removes the pressure: the warm water retains the steam in its *aëriform* state, and thus there is a pressure on the fluid, which prevents it from boiling. As the diminution of pressure causes a fluid to boil at a lower temperature, so its increase produces the opposite effect. Thus water has been heated in a close metallic vessel to the temperature of 400° without passing into vapour.—There is a species of evaporation, commonly known by the name of *spontaneous evaporation*, which many substances, solid as well as fluid, undergo when exposed to the air, though at a temperature very far indeed below the boiling point, nay even in hard frost. Thus every one knows, that, if a little water be at any time spilt upon the ground, it very soon disappears; and the ink, with which we write, quickly dries up. Those substances, which have the lowest boiling point, are also most speedily converted by spontaneous evaporation. A quantity of spirit of wine, thrown upon a table, will disappear much more quickly, than the same quantity of water. The rapidity of this evaporation depends much upon the extent of surface exposed to the air: the same quantity of water will evaporate much more quickly when spread over a large surface, than when heaped upon a smaller one. This evaporation is also much promoted by causing a free circulation of the air: thus almost every one has blown upon a small quantity of fluid for the purpose of drying it up; and ground, which has been wet with rain, becomes much sooner dry in windy than in calm weather. This is easily accounted for. A certain quantity of air can only absorb a certain quantity of vapour; by blowing, new portions of air are continually introduced,

which successively take in the vapour, till the whole is absorbed. This evaporation is increased by an increase of temperature ; and hence it is, that the rain dries up so much more quickly in summer than in winter. By a reduction of temperature, the air will deposit some of the vapour, which it formerly received : this it frequently does in the form of dew, hoar-frost, &c. During spontaneous evaporation much heat is absorbed, or, in other words, a great degree of cold is produced. Hence, in warm climates, water is sprinkled about the rooms to render them more comfortable. There is a difference of opinion among philosophers about the cause of spontaneous evaporation. By some it is ascribed merely to the agency of heat ; according to others, it is produced by the air dissolving the body.—IV. The last general effect of heat which we have mentioned is INCANDESCENCE, by which we mean that *red-heat*, to which bodies are brought by a great increase of temperature, and which is unaccompanied with any other chemical change ; as, for example, when a bar of iron is rendered red-hot by being kept long in a fire. You must be careful to distinguish this incandescence from *combustion* or *inflammation*, such as takes place when you kindle a piece of paper. Incandescence is the effect of high temperature alone ; whereas combustion depends upon the action of the air : incandescence takes place in many bodies which are not susceptible of combustion : after incandescence has ceased, the body returns to its former state ; whereas by combustion a permanent change is effected upon it : incandescence may be renewed ; whereas combustion can never take place again in the visible matter which it leaves behind. The point of temperature at which incandescence takes place is supposed to be the same in all bodies ; but what that point is, it has been found difficult to fix with precision. It is supposed to be about 800°. Incandescence may be produced by friction or percussion, as well as by communication from a heated body. What we have here called incandescence is frequently known by the name of *ignition* ; but this term is no less frequently employed, in common language at least, to denote inflammation.

ON CHEMICAL ATTRACTION.

CHEMICAL ATTRACTION (which is known also by the name of *Chemical Affinity*, or the *Attraction of Composition*), is that force, by which the particles of different bodies are intimately united, so as to form a new substance. It differs from the attraction of gravitation in this, that, while gravity acts on large masses, though at a great distance from each other, chemical attraction unites only small particles when brought so near as to be apparently in actual contact. It differs from the attraction of cohesion in this, that, while the cohesive attraction acts only on similar particles, the chemical attraction operates on particles of a different description from each other. The union produced by chemical attraction is called *chemical combination* or *synthesis*. *Combination* differs from mere *mixture*, in which last the particles, however intimately blended, still exist apart, so as to be capable of being recognised and separated by mechanical means. The substance produced by combination is called a *compound* substance. The substances which are combined are called the *constituent* or *component* parts of this new compound. The chemical process, by which these constituent parts are again separated, is called *decomposition* or *chemical analysis*. As combination differs from mixture, so decomposition is also quite different from mere *division*. Division only makes a separation between what are called the *integral* parts of a body, that is to say parts which continue quite similar in their properties to each other, and to the whole body in its undivided state: whereas decomposition separates the constituent parts; which are quite different, both from each other, and from the substance which they formerly composed. Those substances which cannot be resolved, or at least never have been resolved, into any simpler parts, are called *elements*. Of these Aristotle enumerated four, fire, water, earth, and air; which still, in ordinary language, retain the name of elements, and were so accounted even by philosophers till about fifty years ago. It is now however quite certain that this opinion was erro-

neous: the three last have actually been decomposed into simpler substances.—The following are some of the most remarkable circumstances connected with chemical attraction. 1. All substances have not this affinity (or at least do not exert it) towards each other. Neither sand nor oil, for example, will combine with water; for, if they be blended however intimately by agitation, the one will fall to the bottom, and the other will rise to the top of the water.—2. It is almost essential to the operation of chemical attraction, that one at least of the substances be in a fluid state, otherwise the attraction of cohesion would prevail.—3. Chemical attraction is in many cases much affected by temperature. The addition of heat frequently enables substances to combine, which would not enter into combination at a lower temperature. This also is to be attributed to a diminution of the power of cohesion.—4. The proportions in which bodies will combine are very different in different substances. Some substances combine in all proportions; thus, if we take of water and spirit of wine any proportion, the two bodies will enter into combination. There is a *second class* of combinations, in which a fixed quantity of one of the substances will admit the other into combination in any quantity less than a certain extent, but not beyond it; thus a certain quantity of water will dissolve a certain quantity of salt or any less quantity, but will dissolve no more; when the water has dissolved all the salt which it can take in, it is then said to be *saturated*. There is a *third class* of combinations, in which the substances combine only in one certain proportion, and if there be more than the due proportion of either, the excess remains uncombined and unchanged: this is the case with some gases. There is still a *fourth class*, in which the substances combine in *different* proportions, but these are all definite, and, in the intermediate proportions no combination takes place; thus, there is a metallic substance called manganese, of which 100 parts will combine with 14 of a gas called oxygen, or with 28, or 42, or 56 parts, but will not combine with 30 or any other intermediate number of parts. It is a remarkable cir-

cumstance connected with this class, that, in all cases, the second quantity of the smaller ingredient, that will combine with 100 parts, for example, of the greater, is precisely the double of the first, the third is triple, and so forth in arithmetical progression. Thus if 10 parts be the smallest quantity of one ingredient, that will combine with 100 parts of another, the next quantity of the former, which will so combine, is 20, the third is 30, and so on.—5. When three or more substances are brought within the sphere of chemical action, different results will ensue according to the different natures of the substances. In some cases, the whole ingredients enter into combination, and form one compound. In others, two of them combine, to the exclusion of the third. In a third class of cases, one is combined with each of the others. When a body composed of two substances, which may be called A and B, is added to another body composed of two different substances, which we call C and D, it very often happens that A quits B and combines with C, and B on the other hand combines with D; by which two new compounds are formed, AC and BD. Thus when a compound of sulphuric acid and soda is added to a compound of muriatic acid and lime, the soda combines with the muriatic acid, and the lime combines with the sulphuric.—6. Chemical combination is in general attended with a remarkable change in the properties of the bodies combined, so that we can seldom infer, from a knowledge of the combining parts, what will be the nature and properties of the compound. This is very remarkable in the combination of sulphuric acid and magnesia. The sulphuric acid tastes extremely sour, even when very much diluted with water, turns blue vegetable colours into red, and corrodes both animal and vegetable substances. The magnesia is a white powder, has no taste, will not dissolve in water, and turns blue vegetable colours into green. The compound, formed by the combination of these two very different ingredients in a certain proportion, has a bitter taste, has no effect on vegetable colours, will dissolve in water, and does not corrode either animal or vegetable substances.—Compounds of very different natures and

qualities will ensue from combinations of the same ingredients in different proportions. Thus the air we breathe and aquafortis, though substances widely different from each other,—the one being the support of life, and the other a deadly poison,—are composed of the same ingredients in different proportions. When combination takes place in different determinate proportions, there is generally one of these in which the combining parts will *neutralize* each other, as it is called, that is, will destroy each other's characteristic properties; and in this case the two substances are said to be *saturated* with each other. Thus if an acid, which turns a vegetable blue into red, and an alkali, which turns a vegetable blue into green, be combined in one proportion, the compound will not at all affect the vegetable colour; while, in another proportion, it will turn it into red, and, in another, into green. Bodies when combined, often lose the attraction which they formerly had for particular substances, and acquire for others an attraction which neither possessed before. Neither iron nor the gas called oxygen have any attraction for sulphuric acid while uncombined; but, when the iron and the gas are combined, the compound has a strong attraction for the acid. A change of form is a very frequent result of chemical action. This change is often very remarkable. Thus, by the combination of two gases, sometimes a liquid body is formed, and sometimes even a solid. Water is formed by the combination of two gases called oxygen and hydrogen, in the proportion of two measures of bulk of the latter to one of the former. So also a solid body is formed by the combination of two gases called muriatic acid and ammonia in equal measures.

COMPONENT PARTS OF ATMOSPHERIC AIR.

IN the preceding article, it has been mentioned, that atmospheric air, which was so long regarded as an element, and still retains the name in ordinary language, has, in the present age, been clearly shown to be a compound substance. This discovery we owe to a philo-

sopher of the name of Scheele. It consists of two elastic fluids, called the oxygen and nitrogen gases, with which are mixed a small portion of another gas called carbonic acid, and vapour derived from the evaporation of water from the earth's surface. The carbonic acid gas, however, and the vapour are considered as having only an accidental connexion with the atmosphere, and not as essential constituent parts of it. The air may therefore be said to be composed of the oxygen and nitrogen gases, of which rather more than four-fifths are nitrogen. These substances are very different from each other in their qualities.—I. OXYGEN gas, though the smaller in point of quantity, is by far the more efficacious of the two ingredients of the atmosphere. It is one of the most generally diffused and most powerful chemical agents in nature. It forms an essential component part of both air and of water, and is to be found in almost all animal, vegetable, and mineral substances. It is invisible, and has no taste nor smell. It is heavier than atmospheric air, being in the proportion of about 23 to 20. It is this ingredient, which gives the atmosphere its two most beneficial powers of supporting animal life and combustion. If the air be deprived of its oxygen, it is rendered quite unfit to maintain either respiration or combustion for a single moment. By each of these processes oxygen is consumed, and hence a frequent renewal of the air is absolutely necessary for the continuance of either. When a number of persons meet in a small room, they soon feel the necessity of admitting fresh air, and have recourse to open windows for this purpose. Upwards of a hundred of our countrymen on one occasion lost their lives, by being confined together for a single night at Calcutta, in consequence of the barbarous order of the Nabob, in a small apartment known by the name of the black-hole. You may perhaps be surprised to hear, that fish stand no less in need of oxygen than other animals, in order to support life. If several of them be confined in a small vessel, from which all communication with the external air is excluded; they first become much agitated, and at length expire. If a glass vessel be put over a candle, the light will become gradually feebler,

as the oxygen is consumed, and will at length die away. It is in consequence of the rapid supply of oxygen, that a fire burns so much more briskly, when exposed to a current of air.—II. NITROGEN gas, also known by the name of *azotic gas*, which is by far the larger ingredient of the atmosphere, is invisible, and has no taste nor smell. It is lighter than atmospheric air, being in the proportion of about 97 to 100. It neither supports respiration nor combustion; so that an animal immersed in it immediately expires, and a candle ceases to burn. Were it not for its combination with the oxygen, the air would be too pure, and, affording too free a respiration, would be more than the lungs are fit to bear.—The ATMOSPHERIC air, which is the result of the combination of these two gases, possesses the properties of the oxygen gas diluted with the nitrogen. It is invisible, and has no taste nor smell. Its specific gravity is little more than 1, if that of water be accounted 1000. It supports both respiration and combustion. The ingredients, of which the atmosphere is composed, when combined in different proportions, compose substances possessing very different properties. Thus we have seen in a former article, that, in one proportion,—viz. $2\frac{1}{2}$ volumes of oxygen to 1 of nitrogen,—these ingredients compose *nitric acid*, well known by the name of *aqua fortis*, a substance of a very corrosive and most deadly poisonous nature. In equal volumes these ingredients form *nitric oxide*, which is fatal to animal life, and extinguishes flame. Two volumes of nitrogen and one of oxygen form *nitrous oxide gas*, a substance remarkable for its intoxicating qualities, and hence called *intoxicating gas*, *laughing gas*, or *gas of paradise*. This gas, when inhaled, operates differently upon persons of different constitutions. The sensations produced by it are in general described as exquisitely pleasing,—an irresistible propensity to laughter,—a rapid flow of vivid ideas,—a strong excitement to muscular motion,—joined to a singular thrilling in the ears, fingers, and toes. Mr Wedgewood, after throwing away the bag from him, continued for some time to perform the same motions, as if he had retained it, breathing on actively with an open mouth, and holding his nose with his fingers (as

he had done before) without power to desist, though perfectly aware of the ludicrous nature of the exhibition he was making: he had a violent inclination to leap over the chair and tables, and felt himself so light, that he thought he was going to fly. Persons who inhale this gas, in place of feeling the debility consequent upon imbibing other intoxicating substances, generally describe themselves as more cheerful and light-spirited during the whole of the day.

COMPONENT PARTS OF WATER.

WATER, as well as air, has only of late years been known as a compound body. For this discovery we are indebted to the labours of Cavendish and Watt, who showed that it is composed of two gases, HYDROGEN and OXYGEN. In order to form water, these ingredients are combined in the proportion of about 2 volumes of hydrogen gas to 1 of oxygen, or 1 weight of hydrogen to $7\frac{1}{2}$ of oxygen. We have had occasion to notice oxygen in treating of the component parts of the atmosphere: we shall now consider the leading qualities of hydrogen gas.—HYDROGEN gas is invisible, and has no taste. When quite pure it has no smell, but, when humid, emits a slight odour. It is the lightest substance which has ever been weighed, being, when pure, upwards of a dozen of times lighter than the atmosphere. Hence air-balloons used always to be filled with it: but of late one of its compounds, called *carbureted hydrogen* (the same which is now employed in lighting our streets), has been used for this purpose, because it can now be so easily had at the gas-works. It was this compound, which Green made use of, when he ascended from Leith. Hydrogen neither supports respiration nor combustion, so that, if an animal or a burning candle be immersed in it, the former soon dies, and the latter is extinguished. You will hardly, however, expect to learn, that this substance, which forms by far the larger ingredient of water, is itself, by means of oxygen, so highly inflammable, as to have been originally known by the name of *inflam-*

mable air. It kindles when an ignited body is applied to it in contact with the air; when mixed with twice its bulk of atmospheric air, it explodes when kindled; and, if mixed with pure oxygen gas in the same proportion, the explosion is still more violent. Hydrogen is often collected in mines, forming what is called fire-damp, and, by its awful explosion, proves destructive to the miners.—**WATER**, which is the result of the combination of the two gases above mentioned, is a non-elastic fluid, colourless, tasteless, and inodorous. It is seldom to be found entirely pure and free from mixture. The purest which is to be had, is rain or snow water. Its combinations with other substances are very numerous; but only in a small proportion of them does it act with much energy, so as materially to alter the qualities of the bodies with which it combines. By the fluidity, however, which it imparts to solid bodies, it acts a most important and indispensable part in most chemical actions.—It was long imagined that water was the only compound of oxygen and hydrogen. A few years ago, however, a philosopher of the name of Thenard discovered a new and singular combination of these substances, which is frequently known by the name of *oxygenated water*. This substance contains twice as much oxygen as water does. It is a transparent and colourless liquid, having little smell, and a strong metallic taste. When pure, it is of the specific gravity 1453, that of water being accounted 1000. When applied to the skin, it corrodes and discolours it, producing at the same time a sharp pricking pain. When dropt upon a combination of oxygen and silver, called oxide of silver, or upon oxide of lead, every drop produces an immediate explosion. It has a strong bleaching power. The different effects produced by this substance and by water afford a very striking illustration of the different nature of the compounds, which may be produced by the same substances, when combined in different proportions.

ON THE AGENCY OF WATER AS CONNECTED WITH
HEAT.

LET us attend a little to the powers and qualities, by which water acts its part, in this system of beings. We all admire its pure transparency in a spring; the level and polished surface, with which it reflects objects, that are on the banks of a lake; the mobility with which it runs along the channel of a brook, and the incessant motion of its waves in a stormy sea. But, when viewed with a philosophical eye, it appears much more an object of admiration. The same water, which, under its usual form, is such a principal beauty in the scene of Nature, is employed in her most extensive operations, and is necessary to the formation of all her productions. It penetrates the interior parts of the earth, and appears to assist in the production of various minerals, stones, and earths, found there, by bringing their different ingredients together, and applying them to one another properly, that they may concrete. We know that it arises in vapours from the surface of the ocean, to form the clouds, and to descend again in rain upon the dry land, and give origin to springs, rivers, and lakes; or, upon proper occasions, to form deep snow, which protects the ground and vegetables from the intense and mortal cold, to which some parts of the world are exposed: and, after it has performed this useful office, it readily yields to the heat of summer, and returns to a state, in which it serves the same purposes as rain. By its fluidity and tenuity it penetrates the soil, and the seeds of plants which that soil contains. These it causes to swell and germinate into plants, which depend on water for support. It passes, with freedom and ease, through all their minutest tubes and vessels, and carries with it materials necessary for nourishment and growth, or changes its appearance so as to become part of the plant. There is no plant or vegetable substance, that does not contain, in its composition, a large quantity of water, easily separable from it. The hardest woods contain a great deal. The

softer and more succulent parts of vegetables are almost totally composed of it. Even the oils and resinous substances can be resolved in part into water. It is plainly as necessary to the animals, and is found to be as copious an ingredient in the composition of their bodies, and of all the different parts of them.—These are the numerous and extensive uses of this beautiful substance. But in this succession of forms and operations, which it undergoes, you will perceive that it is set in motion and adapted to these ends, by the nice adjustment and gentle vicissitudes of heat and cold, which attend the returns of day and night, and summer and winter; and that even the *form*, under which it plays its part, depends on the action of heat. Were our heat to be diminished, and to continue diminished, to a degree not very far below the ordinary temperature, the water would lose its fluidity, and assume the form of a solid hard body, totally unfit for the numerous purposes which it serves at present. And, if the diminution of heat were to go still farther, the air itself would lose its elasticity, and would be frozen to a solid useless matter, like the water; and thus all nature would become a lifeless, silent, and dismal ruin. Such being the important part allotted to water, in the magnificent series of natural operations, in consequence of the qualities communicated to it by heat, all its properties become interesting objects of contemplation to a sensible heart. That peculiarity by which the expansion and contraction of water by heat is distinguished from the same effect on other substances (I mean its irregularity between 32° and 40° of Fahrenheit), naturally attracts attention. Even this seemingly trifling distinction has been shown, by Count Rumford, to have a mighty effect in rendering our habitations more comfortable. On the other hand, were the heat, which at present cherishes and enlivens this globe, allowed to increase beyond the bounds at present prescribed to it, besides the destruction of all animal and vegetable life, which would be the immediate and inevitable consequence, the water would lose its present form, and assume that of an elastic vapour like air; the solid parts of the globe would be melted and confounded

a.

together, or mixed with the air and water in smoke and vapour; and nature would return to the original chaos. *Black.*

DIVISION OF LABOUR.

OBSERVE the accommodation of the most common artificer or day-labourer, in a civilized and thriving country, and you will perceive, that the number of people, of whose industry a part, though but a small part, has been employed in procuring him this accommodation, exceeds all computation. The woollen coat, for example, which covers the day-labourer, as coarse and rough as it may appear, is the produce of the joint labour of a great multitude of workmen. The shepherd, the sorter of the wool, the wool-comber or carder, the dyer, the scribbler, the spinner, the weaver, the fuller, the dresser, with many others, must all join their different arts, in order to complete even this homely production. How many merchants and carriers, besides, must have been employed in transporting the materials from some of those workmen to others, who often live in a very distant part of the country! How much commerce and navigation in particular, how many ship-builders, sailors, sail-makers, rope-makers, must have been employed, in order to bring together the different drugs made use of by the dier, which often come from the remotest corners of the world! What a variety of labour, too, is necessary, in order to produce the tools of the meanest of those workmen! To say nothing of such complicated machines, as the ship of the sailor, the mill of the fuller, or even the loom of the weaver, let us consider only what a variety of labour is requisite in order to form that very simple machine, the shears, with which the shepherd clips the wool. The miner, the builder of the furnace for smelting the ore, the feller of the timber, the burner of the charcoal to be made use of in the smelting-house, the brick-maker, the bricklayer, the workmen who attend the furnace, the millwright, the forger, the smith, must, all of them, join their different arts in order to produce them. Were we to ex-

amine, in the same manner, all the different parts of his dress and household furniture, the coarse linen shirt which he wears next his skin, the shoes which cover his feet, the bed which he lies on, and all the different parts which compose it, the kitchen-grate at which he prepares his victuals, the coals which he makes use of for that purpose, dug from the bowels of the earth, and brought to him, perhaps by a long sea and a long land carriage, all the other utensils of his kitchen, all the furniture of his table, the knives and forks, the earthen or pewter plates upon which he serves up and divides his victuals, the different hands employed in preparing his bread and his beer, the glass window which lets in the heat and the light, and keeps out the wind and the rain, with all the knowledge and art requisite for preparing that beautiful and happy invention, without which these northern parts of the world could scarce have afforded a very comfortable habitation, together with the tools of all the different workmen employed in producing these different conveniences :—if we examine, I say, all these things, and consider what a variety of labour is employed about each of them, we shall be sensible, that, without the assistance and co-operation of many thousands, the very meanest person in a civilized country could not be provided, even according to what we very falsely imagine the easy and simple manner, in which he is commonly accommodated. Compared, indeed, with the more extravagant luxury of the great, his accommodation must, no doubt, appear extremely simple and easy ; and yet it may be true, perhaps, that the accommodation of a European prince does not always so much exceed that of an industrious and frugal peasant, as the accommodation of the latter exceeds that of many an African king, the absolute master of the lives and liberties of ten thousand naked savages.

Smith.

ORIGIN AND USE OF MONEY.

THE origin of money is easily explained. One man, we shall suppose, has more of a certain commodity than

he himself has occasion for, while another has less. The former, consequently, would be glad to dispose of, and the latter to purchase, a part of this superfluity. But if this latter should chance to have nothing that the former stands in need of, no exchange can be made between them. The butcher has more meat in his shop than he himself can consume, and the brewer, and the baker would, each of them, be willing to purchase a part of it. But they have nothing to offer in exchange, except the different productions of their respective trades, and the butcher is already provided with all the bread and beer, which he has immediate occasion for. No exchange can, in this case, be made between them. He cannot be their merchant, nor they his customers; and they are, all of them, thus mutually less serviceable to one another. In order to avoid the inconveniency of such situations, every prudent man, in every period of society, after the first establishment of the division of labour, must naturally have endeavoured to manage his affairs in such a manner, as to have at all times by him, besides the peculiar produce of his own industry, a certain quantity of some one commodity or other, such as he imagined few people would be likely to refuse in exchange for the produce of their industry. Many different commodities, it is probable, were successively both thought of and employed for this purpose. In the rude ages of society, cattle are said to have been the common instrument of commerce; and though they must have been a most inconvenient one, yet, in old times, we find things were frequently valued according to the number of cattle, which had been given in exchange for them. The armour of Diomedes, says Homer, cost only nine oxen: but that of Glaucus cost an hundred oxen. Salt is said to be the common instrument of commerce and exchanges in Abyssinia; a species of shells in some parts of the coast of India; dried cod at Newfoundland; tobacco in Virginia; sugar in some of our West India colonies; hides, or dressed leather, in some other countries; and there is at this day (that is, in the year 1776, when Mr Smith wrote) a village in Scotland, where it is not uncommon, I am told, for a workman to carry nails, instead of money, to the baker's shop, or the

storehouse.—In all countries, however, men seem at last to have been determined, by irresistible reasons, to give the preference, for this employment, to metals, above every other commodity. Metals can not only be kept with as little loss as any other commodity, scarce any thing being less perishable than they are; but they can likewise, without any loss, be divided into any number of parts, as by fusion those parts can easily be reunited again,—a quality which no other equally durable commodities possess; and which, more than any other quality, renders them fit to be the instruments of commerce and circulation. The man who wanted to buy salt, for example, and had nothing but cattle to give in exchange for it, must have been obliged to buy salt to the value of a whole ox, or a whole sheep at a time. He could seldom buy less than this, because what he was to give for it could seldom be divided without loss: and, if he had a mind to buy more, he must, for the same reasons, have been obliged to buy double or triple the quantity, the value, to-wit, of two or three oxen, or of two or three sheep. If, on the contrary, instead of sheep or oxen, he had metals to give in exchange for it, he could easily proportion the quantity of the metal to the precise quantity of the commodity, which he had immediate occasion for. Different metals have been made use of, by different nations, for this purpose. Iron was the common instrument of commerce among the ancient Spartans, copper among the ancient Romans, and gold and silver among all rich and commercial nations. Those metals seem originally to have been made use of, for this purpose, in rude bars without any stamp or coinage. Thus, we are told by Pliny, upon the authority of Timæus, an ancient historian, that, till the time of Servius Tullius, the Romans had no coined money, but made use of unstamped bars of copper, to purchase whatever they had occasion for. These rude bars, therefore, performed at this time the function of money.—The use of metals, in this rude state, was attended with two very considerable inconveniences; first, with the trouble of weighing, and secondly, with that of assaying them. In the precious metals, where a small difference in the quantity makes a great differ-

ence in the value, even the business of weighing, with proper exactness, requires, at least, very accurate weights and scales. The weighing of gold, in particular, is an operation of some nicety. In the coarser metals, indeed, where a small error would be of little consequence, less accuracy would, no doubt, be necessary. Yet, we should find it extremely troublesome, if every time a poor man had occasion either to buy or sell a farthing's worth of goods, he was obliged to weigh the farthing. The operation of assaying is still more difficult, still more tedious; and, unless a part of the metal is fairly melted in the crucible with proper dissolvents, any conclusion, that can be drawn from it, is extremely uncertain. Before the institution of coined money, however, unless they went through this tedious and difficult operation, people must always have been liable to the grossest frauds and impositions: and, instead of a pound weight of pure silver, or pure copper, might receive, in exchange for their goods, an adulterated composition, of the coarsest and cheapest materials, which had, however, in their outward appearance, been made to resemble those metals. To prevent such abuses, to facilitate exchanges, and thereby to encourage all sorts of industry and commerce, it has been found necessary, in all countries that have made any considerable advances towards improvement, to affix a public stamp upon certain quantities of such particular metals, as were in those countries commonly made use of to purchase goods. Hence the origin of coined money, and of those public offices called mints; institutions exactly of the same nature with those of the managers and stamp-masters of woollen and linen cloth. All of them are equally meant to ascertain, by means of a public stamp, the quantity and uniform goodness of those different commodities, when brought to market. The first public stamps of this kind, that were affixed to the current metals, seem in many cases to have been intended to ascertain, what it was both most difficult and most important to ascertain, the goodness or fineness of the metal, and to have resembled the sterling mark, which is at present affixed to plate and bars of silver, or the Spanish mark, which is

sometimes affixed to ingots of gold; which being struck only upon one side of the piece, and not covering the whole surface, ascertains the fineness, but not the weight of the metal. Abraham weighs to Ephron the four hundred shekels of silver, which he had agreed to pay for the field of Machpelah. They are said, however, to be the current money of the merchant, and yet are received by weight, and not by tale, in the same manner as ingots of gold and bars of silver are at present. The revenues of the ancient Saxon kings of England are said to have been paid, not in money, but in kind, that is, in victuals and provisions of all sorts. William the Conqueror introduced the custom of paying them in money. This money, however, was for a long time received at the Exchequer by weight, and not by tale. The inconveniency and difficulty of weighing those metals with exactness, gave occasion to the institution of coins, of which the stamp, covering entirely both sides of the piece, and sometimes the edges too, was supposed to ascertain, not only the fineness, but the weight of the metal. Such coins, therefore, were received by tale, as at present, without the trouble of weighing.—The denominations of those coins seem originally to have expressed the weight or quantity of metal contained in them. In the time of Servius Tullius, who first coined money at Rome, the Roman *as*, or *pondo*, contained a Roman pound of good copper. The English *pound* sterling, in the time of Edward I. contained a pound, Tower-weight, of silver of a known fineness. The Scots money *pound* contained, from the time of Alexander I. to that of Robert Bruce, a pound of silver of the same weight and fineness with the English pound sterling. English, French, and Scots *pennies*, too, contained all of them originally a real penny-weight of silver, the 20th part of an ounce, and the 240th part of a pound. The shilling, too, originally seems to have been the denomination of a weight. The English pound and penny contain at present about a third only of their original value, and the Scots pound and penny about a thirty-sixth.—It is in this manner that money has become, in all civilized countries, the universal instrument of commerce, by the intervention

of which goods of all kinds are bought and sold, or exchanged for one another. *Smith.*

SECTION IV.

HISTORY, BIOGRAPHY, AND TRAVELS.

THE SCIENCES, ARTS, AND OCCUPATIONS OF THE ANCIENT EGYPTIANS.

THE Egyptians had an inventive genius, and turned it to profitable speculations. The discoverers of any useful invention received, both living and dead, rewards equal to their profitable labours. The first libraries were in Egypt; and the titles they bore inspired the reader with an eager desire to enter them, and dive into the secrets they contained. They were called "Offices for the diseases of the soul," and that very justly, because the soul was there cured of ignorance, the most dangerous of her maladies, and the parent of them all.—As their country was level, and the air of it always serene and unclouded, they were among the first who observed the courses of the planets. These observations led them to regulate the year from the course of the sun; for their year, we are told, was, from the most remote antiquity, composed of 365 days and 6 hours. To adjust the property of their lands, which were every year covered by the overflowing of the Nile, they were obliged to have recourse to surveys; and this first taught them geometry. They were great observers of nature, which, in a climate so serene, and under so intense a sun, was vigorous and fruitful. By their study and application they invented or improved the science of physic. The sick were not abandoned to the arbitrary will and caprice of the physician. He was obliged to follow fixed rules, which were the observations of old and experienced practitioners, and

written in the sacred books. While these rules were observed, the physician was not answerable for the success ; otherwise a miscarriage cost him his life. This law checked, indeed, the temerity of empirics ; but then it might prevent new discoveries, and keep the art from attaining its just perfection. Every physician, if Herodotus may be credited, confined his practice to the cure of one disease only : one was for the eyes, another for the teeth, and so on.—The Pyramids, the Labyrinth, and that infinite number of obelisks, temples, and palaces, whose precious remains still strike with admiration, and in which were displayed the magnificence of the princes who raised them, the skill of the workmen, the riches of the ornaments diffused over every part of them, and the just proportion and beautiful symmetry of the parts, in which their greatest beauty consisted ; works, in many of which the liveliness of the colours remains to this day, in spite of the rude hand of time, which commonly deadens or destroys them—all this, I say, shows the perfection to which architecture, painting, sculpture, and all other arts had arrived in Egypt.—The Egyptians entertained but a mean opinion of that sort of exercise, which did not contribute to invigorate the body or improve health ; and of music, which they considered as a useless and dangerous diversion, and fit only to enervate the mind.—Husbandmen, shepherds, and artificers, formed the three classes of lower life in Egypt, but were nevertheless had in very great esteem ; particularly husbandmen and shepherds. The body politic requires a superiority and subordination of its several members. For as, in the natural body, the eye may be said to hold the first rank, yet its lustre does not dart contempt upon the feet, the hands, or even on those parts which are less honourable : in like manner, among the Egyptians, the priests, soldiers, and scholars were distinguished by particular honours ; but all professions, to the meanest, had their share in the public esteem, because the despising of any man, whose labours, however mean, were useful to the state, was thought a crime. Thus arts were raised to their highest perfection. The honour, which cherished them, mixed with every thought and

care for their improvement. Every man had his way of life assigned him by the laws, and it was perpetuated from father to son. Two professions at one time, or a change of that which a man was born to, were never allowed. By these means men became more able and expert in employments, which they had always exercised from their infancy; and every man adding his own experience to that of his ancestors, was more capable of attaining perfection in this particular art. Besides, this wholesome institution, which had been established anciently throughout Egypt, extinguished all irregular ambition; and taught every man to sit down contented with his own condition, without aspiring to one more elevated, from interest, vain-glory, or levity. I have said that husbandmen particularly, and those who took care of flocks, were in great esteem in Egypt; some parts of it excepted, where the latter were not suffered. It was, indeed, to these two professions, that Egypt owed its riches and plenty. The culture of lands, and the breeding of cattle will, in truth, be an inexhaustible fund of wealth in all countries, where, as in Egypt, these profitable callings are supported and encouraged. "For," says Abbé Fleury, "it is the peasant who feeds the citizen, the magistrate, the gentleman, the ecclesiastic: and, whatever artifice may be used to convert money into commodities, and these back again into money, yet all must ultimately be owned to be received from the products of the earth, and the animals which it sustains and nourishes." *Rollin.*

FUNERALS OF THE ANCIENT EGYPTIANS.

IN Egypt, when any person died, all the kindred and friends quitted their usual habits, and put on mourning; and abstained from baths, wine, and dainties of every kind. The mourning lasted forty or seventy days, probably according to the quality of the person. Bodies were embalmed three ways. The most magnificent was bestowed on persons of distinguished rank, and the expense amounted to a talent of silver, or nearly L.140 sterling. They filled the body with myrrh, cinnamon,

and all sorts of spices. After a certain time it was swathed in lawn fillets, which were glued together with a kind of very thin gum, and then crusted over with the most exquisite perfumes. By these means, it is said, the entire figure of the body, the very lineaments of the face, and the hairs on the eyelids and eyebrows, were preserved in their natural perfection. The body, thus embalmed, was delivered to the relations, who shut it up in a kind of open chest, fitted exactly to the size of the corpse ; and then placed it upright against the wall, either in the sepulchres (if they had any) or in their own houses. These embalmed bodies are what we now call Mummies, which are still brought from Egypt, and are found in the cabinets of the curious. This shows the care which the Egyptians took of their dead. Their gratitude to their deceased relations was immortal. Children, by seeing the bodies of their ancestors thus preserved, recalled to mind those virtues, for which the public had honoured them ; and were excited to a love of those laws, which such excellent persons had left for their security. We find that part of these ceremonies was performed in the funeral honours done to Joseph in Egypt.—Before any person, however, could be admitted into the sacred asylum of the tomb, he underwent a solemn trial ; and this circumstance in the Egyptian funerals, is one of the most remarkable to be found in ancient history. It was a consolation, among the heathens, to a dying man, to leave a good name behind him : and they imagined, that this is the only human blessing, of which death cannot deprive us. But the Egyptians would not suffer praise to be bestowed indiscriminately on all deceased persons. This honour was to be obtained only from the public voice. The assembly of the judges met on the other side of a lake, which they crossed in a boat. He, who sat at the helm, was called Charon in the Egyptian language ; and this first gave the hint to Orpheus, who had been in Egypt, and after him to the other Greeks, to invent the fiction of Charon's boat. As soon as a man was dead, he was brought to his trial. The public accuser was heard. If he proved that the deceased had led a bad life, his memory was condemned, and he was deprived of burial.

Laws, which extended even beyond the grave, had a strong influence upon the minds of the people ; and every one, struck with the disgrace inflicted on the dead person, was afraid to reflect dishonour on his own memory, and that of his family. But, if the deceased person was not convicted of any crime, he was interred in an honourable manner. A still more astonishing circumstance, in this public inquest upon the dead, was, that the throne itself was no protection from it. Kings were spared during their lives, because the public peace was concerned in this forbearance ; but their quality did not exempt them from the judgment passed upon the dead, and even some of them were deprived of sepulture. This custom was imitated by the Israelites. We see, in Scripture, that bad kings were not interred in the monuments of their ancestors. This practice suggested to princes, that, if their majesty placed them out of the reach of men's judgment while they were alive, they would at last be liable to it, when death should reduce them to a level with their subjects. When a favourable judgment was pronounced on a deceased person, the next thing was to proceed to the funeral ceremonies. In his panegyric no mention was made of his birth, because every Egyptian was deemed noble. No praises were considered as just or true, but such as related to the personal merit of the deceased. He was applauded for having received an excellent education in his younger years ; and, in his more advanced age, for having cultivated piety towards the gods, justice towards men, gentleness, modesty, moderation, and all other virtues which constitute the good man. Then all the people shouted, and bestowed the highest eulogiums on the deceased, as one who would be received for ever into the society of the virtuous in Pluto's kingdom.

Rollin.

SPARTAN EDUCATION.

LYCURGUS thought proper to have very few written laws, being persuaded, that the most powerful and effectual method of rendering communities happy, and

people virtuous, is by the good example, and the impression made on the mind by the manner and practice of the citizens ; for the principles, thus implanted by education, remain firm and durable, as they are rooted in the will, which is always a stronger and more durable tie than the yoke of necessity ; and the youth, that have been thus nurtured and educated, become laws and legislators to themselves. He looked upon the education of youth as the greatest and most important object of a legislator's care. His grand principle was, that children belonged more to the state than to their parents ; and, therefore, he would not have them brought up according to their humour and fancies, but would have the state intrusted with the general care of their education, in order to have them formed upon constant and uniform principles, which might inspire them betimes with the love of their country and of virtue. As soon as a boy was born, the elders of each tribe visited him ; and, if they found him well-made, strong, and vigorous, they ordered him to be brought up, and assigned him a portion of land for his inheritance ; if, on the contrary, they found him to be deformed, tender, and weakly, so that they could not expect that he would ever have a strong and healthful constitution, they condemned him to perish, and caused the infant to be exposed. Children were accustomed betimes not to be nice or difficult in their eating ; not to be afraid in the dark, or when they were left alone ; not to give themselves up to peevishness and ill humour, to crying and bawling ; to walk barefoot, that they might be inured to fatigue ; to lie hard at night ; to wear the same clothes summer and winter, in order to harden them against cold and heat. At the age of seven years they were put into the classes, where they were brought up altogether under the same discipline. Their education, properly speaking, was only an apprenticeship of obedience : the legislator having rightly considered, that the surest way to have citizens submissive to the laws and to the magistrates, was to teach children early, and accustom them, from their tender years, to be perfectly obedient to their masters and superiors. Both old and young ate at public tables,

where it was usual for the masters to instruct the boys, by proposing them questions. They would ask them, for example, "Who is the honestest man in the town?"—"What do you think of such or such an action?" The boys were obliged to give a quick and ready answer, which was also to be accompanied with a reason and a proof, both couched in few words: for they were accustomed betimes to the Laconic style, that is, to a close and concise way of speaking and writing. The children were likewise trained up and accustomed to great secrecy: as soon as a young man came into the dining-room, the oldest person of the company used to say to him, pointing to the door, "Nothing spoken here must ever go out there." The most delicate fare, in which the Lacedemonians indulged, was a kind of black broth. Dionysius the tyrant, who happened to be at one of their meals, expressed his surprise, that he should find so insipid what they so highly relished. "I don't wonder at it," said the cook, "for, the seasoning is wanting."—"What seasoning?" replied the tyrant. "Running, sweating, fatigue, hunger, and thirst; these are the ingredients," says the cook, "with which we season all our food."—As for literature, they only learned as much as was necessary. All the sciences were banished out of their country: their study only tended to know how to obey, to bear hardship and fatigue, and to conquer in battle. The superintendent of their education was one of the most honourable men of the city, and of the first rank and condition, who appointed, over every class of boys, masters of the most approved wisdom and probity. The patience and constancy of the Spartan youth most conspicuously appeared in a certain festival, celebrated in honour of Diana surnamed Orthia, where the children, before the eyes of their parents, and in presence of the whole city, suffered themselves to be whipt, till the blood ran down upon the altar of the cruel goddess, where sometimes they expired under the strokes, and all this without uttering the least cry, or so much as a groan or a sigh: and even their own fathers, when they saw them covered with blood and wounds, and ready to expire, exhorted them to persevere to the end with constancy and

resolution. Plutarch assures us, that he had seen with his own eyes a great many children lose their lives on these cruel occasions. The most usual occupations of the Lacedemonians were hunting, and other bodily exercises. They were forbidden to exercise any mechanical art. Their slaves tilled the land for them, for which they paid a certain revenue. The love of their country, and of the public good, was their predominant passion; they did not imagine they belonged to themselves, but to their country. One of the lessons, oftenest and most strongly inculcated upon the Lacedemonian youth, was to bear a great reverence and respect to old men, and to give them proofs of it on all occasions, by saluting them, by making way for them, and giving them place in the streets; by rising to show them honour in all companies and public assemblies; but, above all, by receiving their advice, and even their reproofs, with docility and submission: by these characteristics a Lacedemonian was known wherever he came. At Sparta every thing tended to inspire the love of virtue and the hatred of vice: the actions of the citizens, their conversations, public monuments and inscriptions. It was to preserve these happy dispositions, that Lycurgus did not allow all sorts of persons to travel, lest they should bring home foreign manners, and return infected with the licentious customs of other countries; which would necessarily create, in a little time, an aversion for the life and maxims of Lacedemon. On the other hand, he would suffer no stranger to remain in the city, who did not come thither for some useful and profitable end, but out of mere curiosity; being afraid, that they should bring along with them the defects and vices of their own countries; and being persuaded, at the same time, that it was more important and necessary to shut the gates of the town against depraved and corrupt manners, than against infectious distempers.

Rollin.

MANNERS OF THE PASTORAL TRIBES OF TARTARY.

THE different characters, that mark the civilized nations of the globe, may be ascribed to the use, and

the abuse of reason; which so variously shapes, and so artificially composes, the manners and opinions of a European or a Chinese. But the operation of instinct is more sure and simple than that of reason. It is much easier to ascertain the appetites of a quadruped, than the speculations of a philosopher; and the savage tribes of mankind, as they approach nearer to the condition of animals, preserve a stronger resemblance to themselves and to each other. The uniform stability of their manners is the natural consequence of the imperfection of their faculties. Reduced to a similar situation, their wants, their desires, their enjoyments, still continue the same: and the influence of food or climate, which, in a more improved state of society, is suspended, or subdued, by so many moral causes, most powerfully contributes to form, and to maintain the national character of barbarians. In every age, the immense plains of Scythia or Tartary have been inhabited by vagrant tribes of hunters and shepherds, whose indolence refuses to cultivate the earth, and whose restless spirit disdains the confinement of a sedentary life. In every age, the Scythians and Tartars have been renowned for their invincible courage and rapid conquests. The thrones of Asia have been repeatedly overturned by the shepherds of the north; and their arms have spread terror and devastation over the most fertile and warlike countries of Europe. On this occasion, as well as on many others, the sober historian is forcibly awakened from a pleasing vision; and is compelled, with some reluctance, to confess, that the pastoral manners, which have been adorned with the fairest attributes of peace and innocence, are much better adapted to the fierce and cruel habits of a military life. To illustrate this observation, I shall now proceed to consider a nation of shepherds and of warriors, in the three important articles of their diet, their habitations, and their exercises.—I. The corn, or even the rice, which constitutes the ordinary and wholesome food of a civilized people, can be obtained only by the patient toil of the husbandman. Some of the savages, who dwell between the tropics, are plentifully nourished by the liberality of nature: but, in the climates of the

north, a nation of shepherds is reduced to their flocks and herds. The skilful practitioners of the medical art will determine (if they are able to determine) how far the temper of the human mind may be affected by the use of animal or of vegetable food: and whether the common association of carnivorous and cruel deserves to be considered in any other light, than that of an innocent, perhaps a salutary, prejudice of humanity. Yet, if it be true, that the sentiment of compassion is imperceptibly weakened by the sight and practice of domestic cruelty, we may observe that the horrid objects, which are disguised by the arts of European refinement, are exhibited in their naked and most disgusting simplicity in the tent of a Tartarian shepherd. The ox, or the sheep, are slaughtered by the same hand, from which they were accustomed to receive their daily food; and the bleeding limbs are served, with very little preparation, on the table of their unfeeling murderer. The Tartars indifferently feed on the flesh of those animals, that have been killed for the table, or have died of disease. Horse-flesh, which, in every age and country, has been proscribed, by the civilized nations of Europe and Asia, they devour with peculiar greediness; and this singular taste facilitates the success of their military operations. The active cavalry of Scythia is always followed, in their most distant and rapid incursions, by an adequate number of spare horses, which may be occasionally used, either to redouble their speed, or to satisfy the hunger of the barbarians. Many are the resources of courage and poverty. When the forage round a camp of Tartars is almost consumed, they slaughter the greatest part of their cattle, and preserve the flesh, either smoked or dried in the sun. On the sudden emergency of a hasty march, they provide themselves with a sufficient quantity of little balls of cheese, or rather of hard curd, which they occasionally dissolve in water; and this unsubstantial diet will support, for many days, the life, and even the spirits, of the patient warrior. But this extraordinary abstinence, which the Stoic would approve, and the hermit might envy, is commonly

succeeded by the most voracious indulgence of appetite. The wines of a happier climate are the most grateful present, or the most valuable commodity, that can be offered to the Tartars ; and the only example of their industry seems to consist in the art of extracting from mare's milk a fermented liquor which possesses a very strong power of intoxication. Like the animals of prey, the savages, both of the old and new world, experience the alternate vicissitudes of famine and plenty ; and their stomach is inured to sustain, without much inconvenience, the opposite extremes of hunger and of intemperance.—II. In the ages of rustic and martial simplicity, a people of soldiers and husbandmen are dispersed over the face of an extensive and cultivated country ; and some time must elapse, before the warlike youth of Greece or Italy could be assembled under the same standard, either to defend their own confines, or to invade the territories of the adjacent tribes. The progress of manufactures and commerce insensibly collects a large multitude within the walls of a city : but these citizens are no longer soldiers ; and the arts, which adorn and improve the state of civil society, corrupt the habits of the military life. The pastoral manners of the Scythians seem to unite the different advantages of simplicity and refinement. The individuals of the same tribe are constantly assembled, but they are assembled in a camp ; and the native spirit of these dauntless shepherds is animated by mutual support and emulation. The houses of the Tartars are no more than small tents of an oval form, which afford a cold and dirty habitation for both sexes. The palaces of the rich consist of wooden huts of such a size, that they may be conveniently fixed on large waggons, and drawn by a team, perhaps of twenty or thirty oxen. The flocks and herds, after grazing all day in the adjacent pasture, retire, on the approach of night, within the protection of the camp. The necessity of preventing the most mischievous confusion, in such a perpetual concourse of men and animals, must gradually introduce, in the distribution, the order, and the guard of the encampment, the rudiments of the military art. As soon as the

forage of a certain district is consumed, the tribe, or rather army of shepherds, makes a regular march to some fresh pastures ; and thus acquires, in the ordinary occupations of the pastoral life, the practical knowledge of one of the most important and difficult operations of war. The choice of stations is regulated by the difference of the seasons. These manners are admirably adapted to diffuse, among the wandering tribes, the spirit of emigration and conquest. The connexion between the people and their territory is of so frail a texture, that it may be broken by the slightest accident. The camp, and not the soil, is the native country of the genuine Tartar. Within the precincts of that camp, his family, his companions, his property, are alway included : and, in the most distant marches, he is still surrounded by the objects which are dear, or valuable, or familiar in his eyes. The thirst of rapine, the fear or the resentment of injury, the impatience of servitude, have, in every age, been sufficient causes to urge the tribes of Scythia boldly to advance into some unknown countries, where they might hope to find a more plentiful subsistence, or a less formidable enemy. The revolutions of the north have frequently determined the fate of the south ; and, in the conflict of hostile nations, the victor and the vanquished have alternately drove, and been driven, from the confines of China to those of Germany.—III. The pastoral life, compared with the labours of agriculture and manufactures, is, undoubtedly, a life of idleness : and, as the most honourable shepherds of the Tartar race devolve on their captives the domestic management of the cattle, their own leisure is seldom disturbed by any servile and assiduous cares. But this leisure, instead of being devoted to softer enjoyments, is usually spent in the violent and sanguinary exercise of the chase. The Scythians of every age have been celebrated as bold and skilful riders ; and constant practice had seated them so firmly on horseback, that they were supposed, by strangers, to perform the ordinary duties of civil life, to eat, to drink, and even to sleep, without dismounting from their steeds. They excel in the dexterous ma-

nagement of the lance ; the long Tartar bow is drawn with a nervous arm ; and the weighty arrow is directed to its object with unerring aim and irresistible force. These arrows are often pointed against the harmless animals of the desert, which increase and multiply in the absence of their most formidable enemy ; the hare, the goat, the roebuck, the fallow-deer, the stag, the elk, and the antelope. The vigour and patience, both of the men and horses, are continually exercised by the fatigues of the chase ; and the plentiful supply of game contributes to the subsistence, and even luxury, of a Tartar camp. But the exploits of the hunters of Scythia are not confined to the destruction of timid or innoxious beasts : they boldly encounter the angry wild boar, when he turns against his pursuers, excite the sluggish courage of the bear, and provoke the fury of the tiger, as he slumbers in the thicket. Where there is danger there may be glory ; and the mode of hunting, which opens the fairest field to the exertions of valour, may justly be considered as the image, and as the school of war. The general hunting-matches, the pride and delight of the Tartar princes, compose an instructive exercise for their numerous cavalry. A circle is drawn, of many miles in circumference, to encompass the game of an extensive district ; and the troops, that form the circle, regularly advance towards a common centre : where the captive animals, surrounded on every side, are abandoned to the darts of the hunters. In this march, which frequently continues many days, the cavalry are obliged to climb the hills, to swim the rivers, and to wind through the valleys, without interrupting the prescribed order of their gradual progress. They acquire the habit of directing their eye and their steps to a remote object ; of preserving their intervals ; of suspending or accelerating their pace, according to the motions of the troops on their right and left ; and of watching and repeating the signals of their leaders. Their leaders study, in this practical school, the most important lesson of the military art, the prompt and accurate judgment of ground, of distance, and of time. To employ against a human enemy the same patience

and valour, the same skill and discipline, is the only alteration, which is required in real war ; and the amusements of the chase serve as a prelude to the conquest of an empire.

Gibbon.

SAVAGE TRIBES OF AMERICA.

THE first appearance of the inhabitants of the New World, filled the discoverers with such astonishment, that they were apt to imagine them a race of men different from those of the other hemisphere. Their complexion is of a reddish brown, nearly resembling the colour of copper. The hair of their heads is always black, long, coarse, and uncured. They have no beard, and every part of their body is perfectly smooth. Their persons are of a full size, extremely straight and well proportioned. Their features are regular, though often distorted by absurd endeavours to improve the beauty of their natural form, or to render their aspect more dreadful to their enemies. Their constitution is naturally feeble. They were not only averse to toil, but incapable of it ; and, when roused by force from their native indolence, and compelled to work, they sunk under tasks, which the people of the other continent would have performed with ease. The thoughts and attention of a savage are confined within the small circle of objects immediately conducive to his preservation or enjoyment. Every thing beyond that escapes his observation, or is perfectly indifferent to him. Like a mere animal, what is before his eyes interests and affects him ; what is out of sight, or at a distance, makes little impression. There are several people in America, whose limited understandings seem not to be capable of forming an arrangement for futurity ; neither their solicitude nor their foresight extends so far. While they highly prize such things as serve for present use, they set no value upon those, which are not the object of some immediate want. When, on the approach of the evening, a Caribbee feels himself disposed to go to rest, no consideration will tempt him to sell his hammock :

but, in the morning, when he is sallying out to the business or pastime of the day, he will part with it for the slightest toy that catches his fancy. At the close of winter, while the impression of what he has suffered from the rigour of the climate, is fresh in the mind of the North American, he sets himself with vigour to prepare materials for erecting a comfortable hut, to protect him against the inclemency of the succeeding season ; but, as soon as the weather becomes mild, he forgets what is past, abandons his work, and never thinks of it more, until the return of cold compels him, when too late, to resume it.—Among civilized nations, arithmetic is deemed an essential and elementary science ; but among savages, who have no property to estimate, no hoarded treasures to count, no variety of objects or multiplicity of ideas to enumerate, arithmetic is a superfluous and useless art. Accordingly, among some tribes in America, it seems to be quite unknown. There are many who cannot reckon farther than three, and have no denomination to distinguish any number above it. Several can proceed as far as ten, others to twenty. When they would convey an idea of any number beyond these, they point to the hair of their head, intimating that it is equal to them, or with wonder declare it to be so great that it cannot be reckoned. To despise and degrade the female sex, is the characteristic of the savage state, in every part of the globe. But in America the condition of the women is so peculiarly grievous, and their depression so complete, that servitude is a name too mild to describe their wretched state. A wife, among most tribes, is no better than a beast of burden, destined to every office of labour and fatigue. While the men loiter out the day in sloth, or spend it in amusement, the women are condemned to incessant toil. Tasks are imposed upon them without pity, and services are received without complaisance or gratitude. Every circumstance reminds women of this mortifying inferiority. They must approach their lords with reverence ; they must regard them as more exalted beings, and are not permitted to eat in their presence. In the simplicity of the savage state, the affection of

parents, like the instinctive fondness of animals, ceases almost entirely as soon as their offspring attain maturity. Little instruction fits them for that mode of life, to which they are destined. The parents, as if their duty were accomplished when they have conducted their children through the helpless years of infancy, leave them afterwards at entire liberty. Even in their tender age, they seldom advise or admonish, they never chide or chastise them. They suffer them to be absolute masters of their own actions. In an American hut, a father, a mother, and their posterity live together like persons assembled by accident, without seeming to feel the obligation of the duties mutually arising from this connexion. As filial love is not cherished by the continuance of attention or good offices, the recollection of benefits received in early infancy is too faint to excite it. Parents are not objects of greater regard than other persons. Their children treat them always with neglect, and often with such harshness and insolence, as to fill those who have been witnesses of their conduct, with horror.—Several tribes depend entirely upon the bounty of nature for subsistence, and are unacquainted with every species of cultivation. They neither sow nor plant. The roots which the earth produces spontaneously, the fruits, the berries, and the seeds, which they gather in the woods, together with lizards, and other reptiles, which multiply amazingly with the heat of the climate in a fat soil, moistened by frequent rains, supply them with food during some part of the year. At other times they subsist by fishing; and Nature seems to have indulged the laziness of the South American tribes, by the liberality with which she ministers in this way to their wants. The vast rivers of that region in America abound with an infinite variety of the most delicate fish. The lakes and marshes, formed by the annual overflowing of the waters, are filled with all the different species; where they remain shut up, as in natural reservoirs, for the use of the inhabitants. They swarm in such shoals, that, in some places, they are caught without art or industry. In others, the natives have discovered a method of infecting the water with the gum of certain plants, by which

the fish are so intoxicated, that they float on the surface, and are taken with the hand. Some tribes have ingenuity enough to preserve them without salt, by drying or smoking them upon hurdles over a slow fire. None but tribes contiguous to great rivers can sustain themselves in this manner. The greater part of the American nations, dispersed over the forests with which their country is covered, do not procure subsistence with the same facility. For, although these forests, especially in the southern continent of America, are stored plentifully with game, considerable efforts of activity and ingenuity are requisite in pursuit of it. Necessity incited the natives to the one, and taught them the other. Hunting became their principal occupation; and, as it called forth strenuous exertions of courage, of force, and of invention, it was deemed no less honourable than necessary. This occupation was peculiar to the men. They were trained to it from their earliest youth. A bold and dexterous hunter ranked next in fame to the distinguished warrior, and an alliance with the former is often courted in preference to one with the latter. Hardly any device which the ingenuity of man has discovered, for ensnaring or destroying wild animals, was unknown to the Americans. While engaged in this favourite exercise, they shake off the indolence peculiar to their nature, the latent powers and vigour of their minds are roused, and they become active, persevering and indefatigable. Their sagacity in finding their prey, and their address in killing it, are equal. They discern the footsteps of a wild beast, which escape every other eye, and can follow them with certainty, through the pathless forest. If they attack their game openly, their arrow seldom errs from the mark; if they endeavour to circumvent it by art, it is almost impossible to avoid their toils. Their ingenuity, always on the stretch, and sharpened by emulation as well as necessity, has struck out many inventions, which greatly facilitate success in the chase. The most singular of these is the discovery of a poison, in which they dip the arrows employed in hunting. The slightest wound with those envenomed shafts is mortal. If they only pierce the skin, the blood fixes and congeals in a mo-

ment, and the strongest animal falls motionless to the ground. Nor does this poison, notwithstanding its violence and subtilty infect the flesh of the animal which it kills. That may be eaten with perfect safety, and retains its native relish and qualities.—But the life of a hunter gradually leads man to a state more advanced. If a savage trusts to his bow alone for food, he and his family will be often reduced to extreme distress. Their experience of this surmounts the abhorrence of labour, natural to savage nations, and compels them to have recourse to culture, as subsidiary to hunting. In particular situations, some small tribes may subsist by fishing, independent of any production of the earth raised by their own industry: but, throughout all America, we scarcely meet with any nation of hunters, which does not practise some species of cultivation. The agriculture of the Americans, however, is neither extensive nor laborious. As game and fish are their principal food, all they aim at by cultivation is to supply any occasional defect of these. In the southern continent of America, the natives confined their industry to rearing a few plants, which, in a rich soil and warm climate, were easily trained to maturity. One of these is *pimento*, a small tree, yielding a strong aromatic spice. The Americans, who, like other inhabitants of warm climates, delight in whatever is hot and of poignant flavour, deem this seasoning a necessary of life, and mingle it copiously with every kind of food they take.—In the warmer and more mild climates of America, none of the rude tribes were clothed. But, though naked, they were not unadorned. They dressed their hair in many different forms. They fastened bits of gold, or shells, or shining stones, in their ears, their noses, and cheeks. They stained their skins with a great variety of figures; and they spent much time and submitted to great pain, in ornamenting their persons in this fantastic manner. Not satisfied with those simple decorations, they have a wonderful propensity to alter the natural form of their bodies, in order to render it (as they imagine) more perfect and beautiful. This practice was universal among the rudest of the American tribes. Their operations for that purpose begin as soon

as an infant is born. Some flatten the crowns of their heads ; some squeeze them into the shape of a cone ; others mould them, as much as possible, into a square figure : and they often endanger the lives of their posterity, by their violent and absurd efforts to derange the plan of Nature, or to improve upon her designs. But in all their attempts, either to adorn or to new model their persons, it seems to have been less the object of the Americans to please, or to appear beautiful, than to give an air of dignity and terror to their aspect. It was when the warrior had in view to enter the council of his nation, or to take the field against its enemies, that he assumed his choicest ornaments, and decked his person with the nicest care. The decorations of the women were few and simple ; whatever was precious or splendid was reserved for the men. In several tribes, the women were obliged to spend a considerable part of their time every day, in adorning and painting their husbands, and could bestow little attention in ornamenting themselves. To deck his person was the distinction of a warrior, as well as one of his most serious occupations. All the different tribes, which remain unclothed, are accustomed to anoint and rub their bodies with the grease of animals ; with viscous gums, and with oils of different kinds. By this they check that profuse perspiration, which, in the torrid zone, wastes the vigour of the frame, and abridges the period of human life. By this, too, they provide a defence against the extreme moisture during the rainy season. They likewise, at certain seasons, temper paint of different colours with those unctuous substances, and bedaub themselves plentifully with that composition, by which their skins are protected, not only from the penetrating heat of the sun, but also from the vast tribes of insects, which infest those regions.—Some of the American tribes were so extremely rude, and had advanced so little beyond the primeval simplicity of nature, that they had no houses at all. During the day they take shelter from the scorching rays of the sun, under thick trees ; at night they form a shed with their branches and leaves. In the rainy season they retire into caves formed by the hand of nature, or hollowed out by their

own industry. But even among the tribes which are more improved, the structure of their houses is extremely mean and simple. They are wretched huts, the doors of which are so low, that it is necessary to creep on the hands and feet, in order to enter them. They are without windows, and have a large hole in the middle of the roof to convey out the smoke. Some of their houses are so large as to contain accommodation for fourscore or a hundred persons. These are built for the reception of different families; which dwell together under the same roof, and often around a common fire, without separate apartments, or any kind of screen or partition between the spaces, which they respectively occupy.

Robertson.

VINDICTIVE AND WARLIKE CHARACTER OF THE AMERICAN SAVAGES.

INTEREST is not either the most frequent or the most powerful motive of the incessant hostilities among rude nations. These must be imputed to the passion of revenge; which rages with such violence in the breast of savages, that eagerness to gratify it may be considered as the distinguishing characteristic of men in their uncivilized state. The desire of vengeance is the first, and almost the only principle, which a savage instils into the mind of his children. This grows up with him as he advances in life; and, as his attention is directed to few objects, it acquires a degree of force, unknown among men, whose passions are dissipated and weakened by the variety of their occupations and pursuits. The desire of vengeance, which takes possession of the heart of savages, resembles the instinctive rage of an animal rather than the passion of a man. It turns, with undiscerning fury, even against inanimate objects. If hurt accidentally by a stone, they often seize it in a transport of anger, and endeavour to wreak their vengeance upon it. If struck with an arrow in battle, they will tear it from the wound, break and bite it with their teeth, and dash it on the ground. With respect to their enemies, the rage of vengeance knows

no bounds. When under the dominion of this passion, man becomes the most cruel of all animals. He neither pities, nor forgives, nor spares. The force of this passion is so well understood by the Americans themselves, that they always apply to it in order to excite their people to take arms. If the elders of any tribe attempt to rouse their youth from sloth,—if a chief wishes to allure a band of warriors to follow him in invading an enemy's country, the most persuasive topics of their martial eloquence are drawn from revenge. "The bones of our countrymen," say they, "lie uncovered: their bloody bed has not been washed clean. Their spirits cry against us; they must be appeased. Let us go and devour the people by whom they were slain. Sit no longer inactive upon your mats: lift the hatchet: console the spirits of the dead; and tell them that they shall be avenged." Animated with such exhortations, the youth snatch their arms in a transport of fury, and burn with impatience to imbrue their hands in the blood of their enemies. If they catch the enemy unprepared, they rush upon them with the utmost ferocity, and tearing off the scalps of all those who fall victims to their rage, they carry home those strange trophies in triumph. These they preserve as monuments, not only of their own prowess, but of the vengeance, which their arm has inflicted, upon the people who were objects of public resentment. They are still more solicitous to seize prisoners. During their retreat, if they hope to effect it unmolested, the prisoners are commonly exempt from any insult, and treated with some degree of humanity, though guarded with the most strict attention. But, after this temporary suspension, the rage of the conquerors rekindles with new fury. As soon as they approach their own frontier, some of their number are despatched to inform their countrymen with respect to the success of the expedition. Then the prisoners begin to feel the wretchedness of their condition. The women of the village, together with the youth who have not attained to the age of bearing arms, assemble, and, forming themselves into two lines, through which the prisoners must pass, beat and bruise them with sticks or stones in a cruel manner.

After this first gratification of their rage against their enemies, follow lamentations for the loss of such of their own countrymen, as have fallen in the service, accompanied with words and actions, which seem to express the utmost anguish and grief. But, in a moment, upon a signal given, their tears cease. They pass, with a sudden and unaccountable transition, from the depths of sorrow to transports of joy; and begin to celebrate their victory, with all the wild exultation of a barbarous triumph. The fate of the prisoners remains still undecided. The old men deliberate concerning it. Some are destined to be tortured to death, in order to satiate the revenge of the conquerors; some to replace the members, which the community has lost in that or former wars. They, who are reserved for this milder fate, are led to the huts of those, whose friends have been killed. The women meet them at the door, and, if they receive them, their sufferings are at an end. They are adopted into the family, and according to their phrase, are seated upon the mat of the deceased. They assume his name, they hold the same rank, and are treated thenceforward with all the tenderness due to a father, brother, a husband, or a friend. But if, either from caprice, or an unrelenting desire of revenge, the women of any family refuse to accept of the prisoner who is offered to them, his doom is fixed. No power can then save him from torture and death. While their lot is in suspense, the prisoners themselves appear altogether unconcerned about what may befall them. They talk, they eat, they sleep, as if they were perfectly at ease, and no danger impending. When the fatal sentence is intimated to them, they receive it with an unaltered countenance, raise their death-song, and prepare to suffer like men. Their conquerors assemble as to a solemn festival, resolved to put the fortitude of the captive to the utmost proof. A scene ensues, the bare description of which is enough to chill the heart with horror, wherever men have been accustomed, by milder institutions, to respect their species, and to melt into tenderness at the sight of human suffering. The prisoners are tied naked to a stake, but so as to be at liberty to move round it. All who are present, men, women, and

children, rush upon them like furies. Some burn their limbs with red-hot irons, some mangle their bodies with knives, others tear the flesh from their bones, pluck out their nails by the roots, and rend and twist their sinews. They vie with one another in refinements of torture. Nothing sets bounds to their rage, but the dread of abridging the duration of their vengeance, by hastening the death of the sufferers ; and such is their cruel ingenuity in tormenting, that, by avoiding industriously to hurt any vital part, they often prolong this scene of anguish for several days. In spite of all that they suffer, the victims continue to chant their death-song with a firm voice ; they boast of their own exploits, they insult their tormentors for their want of skill in avenging their friends and relations, they warn them of the vengeance which awaits them on account of what they are now doing, and excite their ferocity by the most provoking reproaches and threats. To display undaunted fortitude, in such dreadful situations, is the noblest triumph of a warrior. To avoid the trial by a voluntary death, or to shrink under it, is deemed infamous and cowardly. If any one betray symptoms of timidity, his tormentors often despatch him at once with contempt, as unworthy of being treated like a man. Animated with those ideas, they endure, without a groan, what it seems almost impossible that human nature should sustain. They appear to be not only insensible of pain, but to court it. " Forbear," said an aged chief of the Iroquois, when his insults had provoked one of his tormentors to wound him with a knife, " forbear these stabs of your knife, and rather let me die by fire, that those dogs, your allies from beyond the sea, may learn by my example, to suffer like men." This magnanimity, of which there are frequent instances among the American warriors, instead of exciting admiration, or calling forth sympathy, exasperates the fierce spirits of their torturers to fresh acts of cruelty. Weary, at length, of contending with men, whose constancy of mind they cannot vanquish, some chief, in a rage, puts a period to their sufferings, by despatching them with his dagger or club.—This barbarous scene is often succeeded by one no less shocking. As it is impossible

to appease the fell spirit of revenge, which ranges in the heart of a savage, this frequently prompts the Americans to devour those unhappy persons, who have been the victims of their cruelty. In every part of the New World there were people, to whom this custom was familiar. Even in those parts, where circumstances, with which we are unacquainted, had, in a great measure, abolished this practice, it seems formerly to have been so well known, that it is incorporated into the idiom of their language. Among the Iroquois, the phrase, by which they express their resolution of making war against an enemy, is, "Let us go and eat that nation." If they solicit the aid of a neighbouring tribe, they invite it to "eat broth made of the flesh of their enemies." Nor was the practice peculiar to rude unpolished tribes: the principle from which it took rise, is so deeply rooted in the minds of the Americans, that it subsisted in Mexico, one of the civilized empires in the New World; and relics of it may be discovered among the more wild inhabitants of Peru. As the constancy of every American warrior may be put to such severe proof, the great object of military education and discipline, in the New World, is to form the mind to sustain it. As the youth of other nations exercise themselves in feats of activity and force, those of America vie with one another in exhibitions of their patience under sufferings. They harden their nerves by those voluntary trials, and gradually accustom themselves to endure the sharpest pain without complaining. A boy and girl will bind their naked arms together, and place a burning coal between them, in order to try who first discovers such impatience as to shake it off. All the trials customary in America, when a youth is admitted into the class of warriors, or when a warrior is promoted to the dignity of captain or chief, are accommodated to this idea of manliness. Among the tribes on the banks of the Orinoco, if a warrior aspires to the rank of captain, his probation begins with a long fast, more rigid than any ever observed by the most abstemious hermit. At the close of this the chiefs assemble: each gives him three lashes with a large whip, applied so vigorously, that his body is al-

most flayed, and, if he betrays the least symptom of impatience, or even sensibility, he is disgraced for ever, and rejected as unworthy of the honour to which he aspires. After some interval, the constancy of the candidate is proved by a more excruciating trial. He is laid in a hammock with his hands bound fast, and an innumerable multitude of venomous ants, whose bite occasions exquisite pain, and produces a violent inflammation, are thrown upon him. The judges of his merits stand around the hammock ; and, while these cruel insects fasten upon the most sensible parts of his body, a sigh, a groan, an involuntary motion, expressive of what he suffers, would exclude him for ever from the rank of captain. Even after this evidence of his fortitude, it is not deemed to be completely ascertained, but must stand another test, more dreadful than any he has hitherto undergone. He is again suspended in his hammock, and covered with leaves of the palmetto. A fire of stinking herbs is kindled underneath, so as he may feel its heat, and be involved in its smoke. Though scorched, and almost suffocated, he must continue to endure with the same patient insensibility. Many perish in this rude essay of their firmness and courage : but such, as go through it with applause, receive the ensigns of their new dignity with much solemnity, and are ever after regarded as leaders of approved resolution, whose behaviour, in the most trying situation, will do honour to their country.

Robertson.

NATURAL ELOQUENCE OF AN AMERICAN CHIEF.

In the year 1774, Colonel Cresap, and a party, having sallied forth to avenge a robbery and murder, committed by two Indians on an inhabitant of the frontiers of Virginia, unfortunately descried a canoe, aboard which happened to be the family of Logan, a chief distinguished for his attention to the whites, and at one fire put all of them to death. In allusion to this catastrophe, and with reference to a depending treaty, Logan, at a subsequent period, sent by a messenger the following speech to Lord Dunmore:—"I appeal to any

white man, if ever he entered Logan's cabin hungry, and he gave him not to eat ; if ever he came cold and naked, and he clothed him not. During the course of the last long and bloody war, Logan remained idle in his cabin, an advocate for peace. Such was my love for the whites, that my countrymen pointed as they passed, and said, ' Logan is the friend of white men.' I have even thought to have lived with you, but for the injuries of one man. Colonel Cresap, the last spring, in cold blood murdered all the relations of Logan, even my women and children. There runs not a drop of my blood in the veins of any living creature. This called on me for revenge. I have fought for it. I have killed many. I have fully glutted my vengeance. For my country, I rejoice at the beams of peace ; but do not harbour a thought that mine is the joy of fear. Logan never felt fear. He will not turn on his heel to save his life: Who is there to mourn for Logan? Not one!"

Jefferson's Notes on Virginia.

The above affecting speech has thus been imitated by Campbell in his *Gertrude of Wyoming*.

Scorning to wield the hatchet for his bribe,
 'Gainst Brandt himself I went to battle forth ;
 Detested Brandt ; he left, of all my tribe,
 Nor man, nor child, nor thing of living birth ;
 No ! not the dog, that watch'd my household hearth,
 Escap'd that night of blood, upon our plains !
 All perish'd !—I alone am left on earth !
 To whom nor relative, nor blood remains,
 No !—not a kindred drop, that runs in human veins.

MANNERS OF THE TURKS AT ALEPPO, IN THE MIDDLE OF THE EIGHTEENTH CENTURY.

As soon as the Turks get out of bed, they smoke a pipe, and drink a small dish of coffee. About an hour afterwards breakfast is served up, consisting of bread, fruit, honey, a preparation of milk called leban, cheese, eggs, or cakes made with butter. The people of distinction either sit at home after breakfast to receive

company, or go abroad themselves to make visits. When they go abroad, not having the conveniency of wheel-carriages, they ride on horseback, attended by two or four pages, walking on each side. The horse is gorgeously decked. The furniture, which reaches almost to the ground, is richly embroidered, or studded with silver: the bridle is ornamented with chains of plain or gilt silver, and silk fringes covering the head and part of the horse's neck, in the manner of a net. A plain or gilt poitrel of massy silver, with a boss and rich fringes hanging from the side, cover the breast. All these ornaments are finely worked, and sometimes enriched with precious stones. The saddle is of crimson velvet, plated behind with silver, and the stirrups are of solid silver. A scimitar, on the blade of which some verse from the Koran is usually inscribed, is girt on the left side of the saddle; and, on the right, a short warlike weapon, resembling a mace; the head of this, and the hilt of the scimitar, are of worked silver, sometimes gilt. The horses are excellently broken, and walk gracefully; so that the Turks, who are in general taught early to ride, make a noble appearance on horseback. From the outer gate, where they dismount, they walk in their boots (their train being borne) to the door of the apartment, and there have them drawn off by a page, who carries the babooge (or slippers), wrapped up in a piece of scarlet cloth.—A bashaw rises from his seat, on the entrance of some of the principal personages, but receives all other visitors sitting. Other persons of distinction usually rise to welcome or bid farewell to their guests. As soon as the visiter has taken his place, a string of pages make their appearance, preceded by an officer (called Kahwagee), distinguished by a large silk apron, who carries a round salver, covered with red cloth, in the middle of which salver is placed a coffeepot, surrounded with half a dozen small cups reversed. The first page, carrying a large silk or embroidered napkin, drops down on his knees, and, resting on his hams, spreads the napkin over the stranger's robe, so as to prevent it being accidentally soiled. A second, in the same attitude, presents the sweetmeat in a crystal cup, together with a small spoon, with

which the guest helps himself. A third, having received a cup from the Kahwagee, stands ready with the coffee; he does not kneel, but stooping gently forward, first lowering then quickly advancing the hand, delivers the cup, with a dexterity to be acquired only by practice. A fourth brings the lighted pipe, and first laying down an utensil (called niffada) for preserving the carpet, upon which the bowl of the pipe is placed, he presents the other end of the pipe, by an easy movement of one arm, while the other hand is placed on the breast. The moment the coffee is finished, a page is ready to receive the empty cup, which he catches, as it were, between both hands, the left palm turned up: another page, kneeling also, removes the napkin, and, the coffee-cup being replaced on the salver, the Kahwagee retires, while the pages, one hand laid on the girdle and crossed by the other, in the attitude of humble attendance, remain at a little distance.—On ceremonial days, on which there is a constant succession of visitors, the pages themselves know the proper time to present the perfume, and bring it without orders from the master; but, at other times, they wait till the guest lays down his pipe, or makes a signal to one of them to take it away. The pipe and niffada are then removed, and, after a little pause, the pages again enter in procession. One spreads a napkin of a different colour from the former; another presents a small bason of sherbet, and holds, displayed in the other hand, an embroidered gauze handkerchief, for drying the lips; a third sprinkles the hands with rose or orange-flower water, from a silver vessel with a long neck. The napkin being then removed, one of the pages brings a silver censer to the master of the house; who, taking from his pocket a small box containing aloes-wood cut into small pieces, either gives a bit to be laid on the live coal, or puts it himself into the censer. This is the last part of the ceremonial; for the visiter, as soon as he has been perfumed, takes leave. At the door he is received by his own pages, and, after putting on his boots, he walks away between two rows of officers of the household, who bow to him as he passes.—If the visiter be a person of very high rank, the host attends him to the top of

the stairs. On particular occasions, the visiter is presented with a horse, sometimes in rich furniture, but, for the most part, in a body-cloth only. It is more usual to make a present of a fur ; and then the person is invested in the Bashaw's presence, the Chausés (a particular class of officers), at the instant of investment, pronouncing a short benediction in a loud voice.—At visits of mere ceremony, the conversation is made up of empty professions and compliments often repeated. These are generally composed in a hyperbolical strain, and expressed with much solemnity. The question "How do you do?" is repeated several times ; and, after a long pause, they begin anew, "And, once more, how do you do?" The next question after this is, "What news? how goes the world?" and the like. Conversation, at ordinary visits, is less fettered by forms. Besides the weather and other common topics, domestic news is circulated, diverting stories are familiarly told ; and, if the great man seem to give encouragement, some of his guests now and then exert their talents for raillery. When he is disposed to converse, the discourse is addressed to him ; but otherwise the company entertain one another, and he either joins them at intervals, or continues musing, as inclination may lead him ; sometimes, indeed, a deep silence reigns, and, after the first compliments, hardly a word is spoken during the whole visit. As the Grandees sit so many hours in public, and receive all company, it is necessary they should be indulged in the privilege of leaving the guests to entertain themselves ; but business, in the meanwhile, is not neglected ; the officers, and others who have affairs to transact, come and go, without interrupting conversation, and either talk aloud, or, kneeling down before the great man, speak so low as not to be heard by any one else. Private business of more importance is transacted at times when no visitors are admitted. The Bashaw regularly gives audience of this kind to his first minister between three and four afternoon, and then all persons whatever are excluded.

Russell.

TURKISH MANNERS—CONTINUED.

THE Turks go to dinner about eleven o'clock in winter, but in summer somewhat earlier. The table is prepared in the following manner. A round cloth is spread for the preservation of the carpet, and upon that is either placed a folding stand (resembling in form the crosses used at European tables), or a small stool about fifteen inches high, which serves to support a large round plate or table, sometimes of silver, but commonly only of copper tinned. Upon this a few saucers are symmetrically disposed, containing pickles, salad, leban, and salt: and all round, nearer the edge, are laid thin narrow cakes of very white bread, and wooden or tortoise-shell spoons. They do not use table-knives and forks, their fingers serving instead of them; and the roast-meat is usually so much done, that it can easily be torn asunder, or is carved by one of the attendants with his knife or *hanjer*. Each guest then helps himself, and, if the morsel happens to be too large, the cakes of bread supply the place of plates. A silk and cotton towel, long enough to surround the table, is laid on the ground, which the guests when seated take up over their knees. After the table is thus prepared, a silver ewer and bason, for washing the hands, is brought round to the guests; who, laying aside their outer garment in the summer, or the large fur in the winter, take their places, and sit all the while on their hams and heels; a posture insufferably irksome to those who have not been early accustomed to it; and, to many elderly men, so uneasy, that they either sit on the edge of the mattress, or are indulged with a cushion reversed. It is customary for each person to say a short grace for himself in a low voice. The dishes are brought up covered, and set down in the middle of the table, one at a time in succession, the whole amounting to twenty or thirty; and the same service is repeated with little variation every day. The first dish is almost constantly soup, and the last a plain pilaw of rice and butter. The intermediate

course consists of a variety of dishes, such as mutton in small bits roasted on iron skewers, with slices of either apples or artichoke-bottoms and onions between each piece ; or mutton minced small and beat up with spiceries into balls, and roasted also on skewers ; mutton or lamb stewed with gourds, roots, and herbs ; fowls, and pigeons, and sometimes quails and other small birds, boiled or roasted, but more frequently made into ragouts. Farce-meat, which is called mahshee, composed of mutton, rice, pistachios, currants, pine-nuts, almonds, suet, spice, and garlic, is served up in a variety of shapes, and takes an additional name from the respective fruit, which is farced or stuffed, as mahshee of mad-apple, cucumber, or gourd. It is also enveloped in the leaves of vine, endive, beet, or borage, and is then called Yaprak. A lamb, thus farced and roasted entire, is a dish not uncommon at feasts. Burgle, which is wheat prepared in a certain manner, is an article of universal use in the Eastern cookery. It is sometimes, like rice, made into a pilaw, but more commonly, being beat up with minced meat, suet, and spiceries, is formed into a large ball, and either boiled or fried. They have also several sorts of pies, and a great variety of sweet dishes and pastry. The Turks seldom eat fish ; and sea-fish is rarely brought to town except for the Europeans. Neither are they fond of geese or ducks ; and wild fowl, as well as other kinds of game, though very plentiful, are seldom seen at their tables. A few plates of sweet flummery are served by way of dessert, for they seldom serve fruit at that time ; and, last of all, appears a large bowl of khushaf, which is a decoction of dried figs, currants, apricots, cherries, apples, or other fruits made into thin sirup, with pistachio-nuts, almonds, or some slices of the fruit, left swimming in the liquor. This is served cold, sometimes iced ; and with a few spoonfuls of it the repast concludes.—They drink nothing but water at meals, and very often do not drink till an hour after dinner. They do not drink healths ; but, when one drinks either water or sherbet, the person next him, or the master of the house, if he observes it, laying his right hand on his heart (the ordinary mode

of salutation), wishes it may do him good. This compliment is paid immediately after the person has drank, and is returned by touching the right temple slightly, and saying, "May God prolong your life," or some such expression of good wishes. They sit only a short while at table, and, when a person does not choose either to eat more, or to wait the khushaf, he may rise without breach of good manners. But the host often invites to taste particular dishes, and the removes are at any rate so quick, that the guests, by necessity, as well as complaisance, are induced to eat of a greater variety than they probably would do from choice. After getting up from table, every one has water and soap brought him for washing the mouth and hands; after which pipes and coffee are served round.—The description given above will be understood of the tables of the grandees; those of the inferior ranks are served much more frugally; among people of middling condition, who have seldom more than three or four dishes, the whole is set down at once on the table, and, when the masters have finished, the servants in waiting, after bringing the coffee and pipes, sit down to the victuals that are left. The number of dishes decreases of course in the inferior ranks of life; but, except among people of the lowest class, who live almost wholly on vegetables, the quality of the dishes is nearly the same; that is, they are highly seasoned, greasy, and generally made very acid with the juice of lemons, pomegranates, or unripe grapes.—Between one and two in the afternoon, the great men retire into their private apartments, and are not visible again till between three and four. They sup in the winter about five o'clock, and in the summer at six, making little difference in the service between that meal and dinner. They frequently have company at supper, or make familiar visits after it, but seldom sit later than ten o'clock: this is meant of people of rank, for others sup at home, and are rarely seen in the street after evening prayer. At these nocturnal assemblies they smoke incessantly, drink coffee two or three times, and, in the winter, are regaled with sweet pastry. Several circumstances render these assemblies more entertaining than those of the forenoon: they are

not so often intruded upon by business, the company is more select, the sherbet and perfume are omitted, and the air of the whole is less formal. *Russell.*

THE ANCIENT BRITONS.

ALL ancient writers agree in representing the first inhabitants of Britain as a tribe of the Gauls or Celtæ, who peopled that island from the neighbouring continent. Their language was the same, their manners, their government, their superstition: varied only by those small differences, which time, or a communication with the bordering nations, must necessarily introduce. The inhabitants of Gaul, especially in those parts which lie contiguous to Italy, had acquired from a commerce with their southern neighbours, some refinement in the arts, which gradually diffused themselves northwards, and spread but a very faint light over this island. The Greek and Roman navigators, or merchants (for there were scarcely any other travellers in those ages), brought back the most shocking accounts of the ferocity of the people, which they magnified, as usual, in order to excite the admiration of their countrymen. The south-east parts, however, of Britain, had already, before the age of Cæsar, made the first and most requisite step towards a civil settlement; and the Britons, by tillage and agriculture, had there increased to a great multitude. The other inhabitants of the island still maintained themselves by pasture; they were clothed with skins of beasts; they dwelt in huts, which they reared in the forests and marshes, with which the country was covered; they shifted easily their habitations, when actuated either by hopes of plunder, or the fear of an enemy: the conveniency of feeding their cattle was even a sufficient motive for removing their seats; and as they were ignorant of all the refinements of life, their wants and their possessions were equally scanty and limited.—The Britons were divided into many small nations or tribes. Their governments, though monarchical, were free, as well as those of all the Celtic nations. Each state was divided into factions within itself; it

was agitated with jealousy or animosity against the neighbouring states ; and, while the arts of peace were yet unknown, wars were the chief occupation, and formed the chief object of ambition among the people. —The religion of the Britons was one of the most considerable parts of their government ; and the Druids, who were their priests, possessed great authority among them. Besides ministering at the altar, and directing all religious duties, they presided over the education of youth ; they enjoyed an immunity from wars and taxes ; they possessed both the civil and criminal jurisdiction ; they decided all controversies among states, as well as among private persons, and whoever refused to submit to their decrees was exposed to the most severe penalties. The sentence of excommunication was pronounced against him ; he was forbidden access to the sacrifices or public worship : he was debarred all intercourse with his fellow-citizens, even in the common affairs of life ; his company was universally shunned, as profane and dangerous : he was refused the protection of law ; and death itself became an acceptable relief from the misery and the infamy, to which he was exposed. Thus the bands of government, which were naturally loose among that rude and turbulent people, were happily corroborated by the terrors of their superstition.—No species of superstition was ever more terrible, than that of the Druids. Besides the severe penalties, which it was in the power of the ecclesiastics to inflict in this world, they inculcated the eternal transmigration of souls ; and thereby extended their authority as far as the fears of their timorous votaries. They practised their rites in dark groves, or other secret recesses ; and, in order to throw a greater mystery over their religion, they communicated their doctrines only to the initiated, and strictly forbade the committing of them to writing ; lest they should, at any time, be exposed to the examination of the profane vulgar. Human sacrifices were practised among them ; the spoils of war were often devoted to their divinities ; and they punished, with the severest tortures, whoever dared to secrete any part of the consecrated offering. These treasures they kept in woods and forests, secured by no other guard than the

terrors of their religion ; and this steady conquest over human avidity may be regarded as more signal, than their prompting men to the most extraordinary and most violent efforts. No idolatrous worship ever attained such an ascendant over mankind, as that of the ancient Gauls and Britons ; and the Romans, after their conquest, finding it impossible to reconcile those nations to the laws and institutions of their masters, while it maintained its authority, were at last obliged to abolish it by penal statutes ; a violence, which had never, in any other instance, been practised by those tolerating conquerors.

Hume.

ALFRED'S INSTITUTIONS.

AFTER Alfred had subdued, and had settled or expelled the Danes, he found the kingdom in the most wretched condition ; desolated by the ravages of those barbarians, and thrown into disorders, which were calculated to perpetuate its misery. Though the great armies of the Danes were broken, the country was full of straggling troops of that nation, who, being accustomed to live by plunder, were become incapable of industry ; and who, from the natural ferocity of their manners, indulged themselves in committing violence, even beyond what was requisite to supply their necessities. The English themselves, reduced to the most extreme indigence by these continued depredations, had shaken off all bands of government : and those, who had been plundered to-day, betook themselves next day to the like disorderly life, and, from despair, joined the robbers in pillaging and ruining their fellow-citizens. These were the evils, for which it was necessary, that the vigilance and activity of Alfred should provide a remedy. That he might render the execution of justice strict and regular, he divided all England into counties ; these counties he subdivided into hundreds ; and the hundreds into tithings. Every householder was answerable for the behaviour of his family and slaves, and even of his guests, if they lived above three his house. Ten neighbouring householders were

formed into one corporation, who, under the name of a tithing, decennary, or fribourg, were answerable for each other's conduct, and over whom one person, called a tithing-man, headbourg, or borsholder, was appointed to preside. Every man was punished as an outlaw, who did not register himself in some tithing; and no man could change his habitation, without a warrant or certificate from the borsholder of the tithing, to which he formerly belonged. When any person in any tithing or decennary was guilty of a crime, the borsholder was summoned to answer for him; and, if he were not willing to be surety for his appearance, and his clearing himself, the criminal was committed to prison, and there detained till his trial. If he fled, either before or after finding sureties, the borsholder and decennary became liable to inquiry, and were exposed to the penalties of law. Thirty-one days were allowed them for producing the criminal; and, if the time elapsed without their being able to find him, the borsholder, with two other members of the decennary, was obliged to appear, and, together with three chief members of the three neighbouring decennaries (making twelve in all), to swear that his decennary was free from all privy, both of the crime committed, and of the escape of the criminal. If the borsholder could not find such a number to answer for their innocence, the decennary was compelled by fine to make satisfaction to the king, according to the degree of the offence. By this institution, every man was obliged, from his own interest, to keep a watchful eye over the conduct of his neighbours.—But Alfred took care to temper these rigours by other institutions, favourable to the freedom of the citizens; and nothing could be more popular and liberal, than his plan for the administration of justice. The borsholder summoned together his whole decennary, to assist him in deciding any lesser difference, which occurred among the members of this small community. In affairs of greater moment, in appeals from the decennary, or in controversies between members of different decennaries, the cause was brought before the hundred, which consisted of ten decennaries, or a hundred families of freemen, and which was regularly assembled once in four weeks for

the deciding of causes. And, besides these monthly meetings of the hundred, there was an annual meeting, appointed for a more general inspection of the police of the district, for the inquiry into crimes, the correction of abuses in magistrates, and the obliging of every person to show the decennary, in which he was registered. The people, in imitation of their ancestors the ancient Germans, assembled there in arms.—The next superior court to that of the hundred was the county court, which met twice a-year, after Michaelmas and Easter, and consisted of the freeholders of the county, who possessed an equal vote in the decision of causes. The bishop presided in this court, together with the alderman; and the proper object of the court was the receiving of appeals from the hundreds and decennaries, and the deciding of such controversies, as arose between men of different hundreds. Formerly, the alderman possessed both the civil and military authority; but Alfred, sensible that this conjunction of powers rendered the nobility dangerous and independent, appointed also a sheriff in each county, who enjoyed a co-ordinate authority with the former in the judicial function. His office also empowered him to guard the rights of the crown in the county, and to levy the fines imposed, which, in that age, formed no contemptible part of the public revenue. There lay an appeal, in default of justice, from all these courts to the king himself in council.—As good morals and knowledge are almost inseparable in every age, though not in every individual, the care of Alfred for the encouragement of learning among his subjects was another useful branch of his legislation, and tended to reclaim the English from their former dissolute and ferocious manners. But the king was guided in this pursuit less by political views, than by his natural bent and propensity towards letters. When he came to the throne, he found the nation sunk into the grossest ignorance and barbarism, proceeding from the continued disorders in the government, and from the ravages of the Danes: the monasteries were destroyed; the monks butchered or dispersed; their libraries burnt; and thus the only seats of erudition in those ages were totally sub-

verted. Alfred himself complains, that, on his accession, he knew not one person south of the Thames, who could so much as interpret the Latin service ; and very few in the northern parts, who had even reached that pitch of erudition. But this prince invited over the most celebrated scholars from all parts of Europe ; he established schools everywhere for the instruction of his people ; he founded, at least repaired, the University of Oxford, and endowed it with many privileges, revenues, and immunities ; he enjoined by law all freeholders possessed of two hides of land, or more, to send their children to school for their instruction ; he gave preferment, both in church and state, to such only as had made some proficiency in knowledge ; and, by all these expedients, he had the satisfaction, before his death, to see a great change in the face of affairs ; and, in a work of his, which is still extant, he congratulates himself on the progress which learning, under his patronage, had already made in England.—Sensible that the people, at all times, especially when their understandings are obstructed by ignorance and bad education, are not much susceptible of speculative instructions, Alfred endeavoured to convey his morality by apologues, parables, stories, apophthegms, couched in poetry ; and, besides propagating among his subjects former compositions of that kind, which he found in the Saxon tongue, he exercised his genius in inventing works of a like nature, as well as in translating from the Greek, the elegant fables of *Æsop*. He also gave Saxon translations of different histories, and likewise of a work concerning the consolation of philosophy. And he deemed it nowise derogatory from his other great characters of sovereign, legislator, warrior, and politician, thus to lead the way to his people in the pursuits of literature.—Meanwhile, this prince was not negligent in encouraging the vulgar and mechanical arts, which have a more sensible, though not a closer, connexion with the interests of society. He invited, from all quarters, industrious foreigners to repeople his country, which had been desolated by the ravages of the Danes. He introduced and encouraged manufactures of all kinds ; and no inventor or im-

prover of any ingenious art did he suffer to go unrewarded. He prompted men of activity to betake themselves to navigation, to push commerce into the most remote countries, and to acquire riches by propagating industry among their fellow-citizens. He set apart a seventh portion of his own revenue for maintaining a number of workmen, whom he constantly employed in rebuilding the ruined cities, castles, palaces, and monasteries. Even the elegances of life were brought to him from the Mediterranean and the Indies ; and his subjects, by seeing those productions of the peaceful arts, were taught to respect the virtues of justice and industry, from which alone they could arise. Both living and dead, Alfred was regarded by foreigners, no less than by his own subjects, as one of the wisest and best princes, that ever adorned the annals of any nation. *Hume.*

EDWARD VI.

KING Edward the Sixth, that incomparable young prince, died in 1553, in the sixteenth year of his age. He was counted the wonder of his time. He gave very early many indications of a good disposition to learning, and of a most wonderful probity of mind ; and, above all, of great respect to religion, and everything relating to it ; so that, when he was once in one of his childish diversions, somewhat being to be reached at, that he and his companions were too low for, one of them laid on the floor a great Bible, that was in the room, to step on ; which he beholding with indignation, took up the Bible himself, and gave over his play for that time. He was, in all things, subject to the orders laid down for his education, and profited so much in learning, that all about him conceived great hopes of extraordinary things from him, if he had lived. He was so forward in his learning, that, before he was eight years old, he wrote Latin letters to his father. " All the graces," says Cardan, " were in him. He had many tongues when he was yet but a child : together with the English, his natural tongue, he had both Latin and

French ; nor was he ignorant, as I hear, of the Greek, Italian, and Spanish, and perhaps some more. But for the English, French, and Latin, he was exact in them, and apt to learn every thing. Nor was he ignorant of logic, of the principles of natural philosophy, nor of music. The sweetness of his temper was such as became a mortal ; his gravity becoming the majesty of a king ; and his disposition suitable to his high degree." He was not only learned in the tongues, and other liberal sciences, but knew well the state of his kingdom. He kept a book, in which he wrote the characters, that were given him, of all the chief men of the nation, all the judges, lord-lieutenants, and justices of the peace over England : in it he had marked down their way of living, and their zeal for religion. He had studied the matter of the mint, with the exchange and value of money ; so that he understood it well, as appears by his journal. He also understood fortification, and designed well. He knew all the harbours and forts, both of his own dominions, and of France and Scotland ; and how much water they had, and what was the way of coming into them. He acquired great knowledge of foreign affairs ; so that he talked with the ambassadors about them in such a manner, that they filled all the world with the highest opinion of him that was possible ; which appears in most of the histories of that age. He had great quickness of apprehension ; and, being mistrustful of his memory, used to take notes of almost every thing he heard ; and afterwards wrote them out in his journal. He had a copy brought him of every thing that passed in council, which he put in a chest, and kept the key of that always himself. In a word, the natural and acquired perfections of Edward's mind were wonderful ; but his virtues and true piety were yet more extraordinary. He was an exact keeper of his word ; and therefore, as appears by his journal, was most careful to pay his debts, and to keep his credit ; knowing that to be the chief nerve of government ; since a prince, that breaks his faith, and loses his credit, has thrown up that which he can never recover, and made himself liable to perpetual distrusts, and extreme contempt. He was

so affable and sweet-natured, that all had free access to him at all times ; by which he came to be most universally beloved, and all the high things that could be devised, were said by the people, to express their esteem of him.—He was tender and compassionate in a high measure : so that he was much against the taking away the lives of heretics ; and therefore, when Cranmer persuaded him to sign the warrant for the burning of Joan of Kent, he said to him with tears in his eyes, that he was not willing to do it, because he thought that was to send her quick to hell, and that if he did wrong, since it was in submission to his authority, he should answer for it to God. He took particular care of the suits of all poor persons ; and gave Dr Cox special charge to see that their petitions were speedily answered, and used oft to consult with him, how to get their matters set forward. He expressed great tenderness to the miseries of the poor in his sickness. He considered there were three sorts of poor ; such as were so by natural infirmity or folly, as impotent persons, and madmen, or idiots ; such as were so by accident, as sick or maimed persons ; and such as, by their idleness, did cast themselves into poverty. So he ordered the Greyfriars Church near Newgate, with the revenues belonging to it, to be a house for orphans ; St Bartholomew's near Smithfield, to be an hospital ; and gave his own house of Bridewell to be a place of correction and work for such as were wilfully idle. He also confirmed and enlarged the grant for the hospital of St Thomas in Southwark, which he had erected and endowed some months before. And, when he set his hand to these foundations, he thanked God, that had prolonged his life, till he had finished that design.—The king had, above all things, a great regard to religion. He took notes of such things as he heard in sermons, which more specially concerned himself ; and made his measures of all men by their zeal in that matter. He expressed, in the whole course of his sickness, great submission to the will of God, and seemed glad at the approaches of death ; only the consideration of religion and the church touched him much ; and upon that account, he said, he was desirous of life. Among

his last words were, "Lord God, deliver me out of this miserable and wretched life, and take me among thy chosen ; howbeit not my will but thine be done. Lord, I commit my spirit to thee. O Lord, thou knowest how happy it were for me to be with thee ; yet for thy chosen's sake send me life and health, that I may truly serve thee. O my Lord God, bless my people and save thine inheritance ; O Lord God save thy chosen people of England." Soon after, the pangs of death coming on him, he said while Sir Henry Sidney was holding him in his arms, "I am faint : Lord have mercy on me, and receive my spirit," and so he breathed out his innocent soul. All men, who saw and observed his excellent qualities, looked on him as one raised by God for most extraordinary ends ; and, when he died, concluded, that the sins of England must needs be very great, that had provoked God to take from them a prince, under whose government they were likely to have seen such blessed times. *Burnett.*

OLIVER CROMWELL.

[To those who are dazzled with the glory and imaginary happiness of successful ambition, the following description of the latter part of Cromwell's life cannot be destitute of instruction.] The protector reaped little satisfaction from the success of his arms abroad : the situation, in which he stood at home, kept him in perpetual uneasiness and inquietude. His administration, so expensive both by military enterprises and secret intelligence, had exhausted his revenue, and involved him in a considerable debt. The Royalists, he heard, had renewed their conspiracies for a general insurrection. Even the army was infected with the general spirit of discontent : and some sudden and dangerous irruption was every moment to be dreaded from it. Of assassinations, likewise, he was apprehensive, from the zealous spirit which actuated the soldiers.— He might better have supported those fears and apprehensions, which the public distempers occasioned, had he enjoyed any domestic satisfaction, or possessed any.

cordial friend of his own family, in whose bosom he could safely have unloaded his anxious and corroding cares. But Fleetwood, his son-in-law, actuated by the wildest zeal, began to discover, that Cromwell, in all his enterprises, had entertained views of promoting his own grandeur, more than of encouraging piety and religion, of which he made such fervent professions. His eldest daughter, married to Fleetwood, had adopted republican principles so vehement, that she could not with patience behold power lodged in a single person, even in her indulgent father. His other daughters were no less prejudiced in favour of the royal cause, and regretted the violence and iniquities, into which they thought their family had so unhappily been transported. Above all, the sickness of Mrs Claypole, his peculiar favourite, a lady endued with many humane virtues and amiable accomplishments, depressed his anxious mind, and poisoned all his enjoyments. She had entertained a high regard for Dr Huet, lately executed; and, being refused his pardon, the melancholy of her temper, increased by her distempered body, had prompted her to lament to her father all his sanguinary measures, and urge him to compunction for those heinous crimes, into which his fatal ambition had betrayed him. Her death, which followed soon after, gave new edge to every word, which she had uttered.—All composure of mind was now for ever fled from the Protector. He felt that the grandeur, which he had attained with so much guilt and courage, could not ensure him that tranquillity, which it belongs to virtue alone and moderation fully to ascertain. Overwhelmed with the load of public affairs,—dreading perpetually some fatal accident in his distempered government,—seeing nothing around him but treacherous friends, or enraged enemies,—possessing the confidence of no party,—resting his title on no principle, civil or religious,—he found his power to depend on so delicate a poise of actions and interests, as the smallest event was able, without any preparation, in a moment to overturn. Death, too, which, with such signal intrepidity, he had braved in the field, being incessantly threatened by the poniards of fanatical or interested assassins, was ever present to

his terrified apprehension, and haunted him in every scene of business or repose. Each action of his life betrayed the terrors, under which he laboured. The aspect of strangers was uneasy to him : with a piercing and anxious eye he surveyed every face, to which he was not daily accustomed. He never moved a step without strong guards attending him : he wore armour under his clothes, and further secured himself by offensive weapons, a sword, falchion, and pistols, which he always carried about him. He returned from no place by the direct road, or by the same way which he went. Every journey he performed with hurry and precipitation. Seldom he slept above three nights together in the same chamber : and he never let it be known beforehand what chamber he intended to choose, nor intrusted himself in any, which was not provided with back-doors, at which sentinels were carefully placed. Society terrified him, while he reflected on his numerous, unknown, and implacable enemies ; solitude astonished him, by withdrawing that protection, which he found so necessary for his security.—His body, also, from the contagion of his anxious mind, began to be affected ; and his health seemed sensibly to decline. He was seized with a slow fever, which changed into a tertian ague. For the space of a week no dangerous symptoms appeared ; and, in the intervals of the fits, he was able to walk abroad. At length the fever increased, and he himself began to entertain some thoughts of death, and to cast his eye towards that future existence, whose idea had once been intimately present to him ; though since, in the hurry of affairs, and in the shock of wars and factions, it had, no doubt, been considerably obliterated. His physicians were sensible of the perilous condition, to which his distemper had reduced him ; but his chaplains so buoyed up his hopes, that he began to believe his life out of all danger. Meanwhile, all the symptoms began to wear a more fatal aspect, and, on the 3d of September (1658), that very day which he had always considered as the most fortunate for him, he expired.

Hume.

BLACK-HOLE AT CALCUTTA.

[In a former article of this Collection, on the subject of the component parts of air, reference was made to the melancholy catastrophe which took place in the Black-hole at Calcutta, of which the following is a more particular detail.] The old Suba or Viceroy of Bengal, dying in the month of April, in the year 1756, was succeeded by his adopted son, Sur Raja al Dowlat, a young man of violent passions, without principle, fortitude, or good faith, who began his administration with acts of perfidy and violence. In all probability, his design against the English settlements was suggested by his rapacious disposition, on a belief that they abounded with treasure: as the pretences, which he used for commencing hostilities, were altogether inconsistent, false, and frivolous. In the month of May, he caused the English factory at Cassimbuzzar to be invested, and inviting Mr Watts, the chief of the factory, to a conference, under the sanction of a safe conduct, detained him as prisoner; then, by means of fraud and force intermingled, made himself master of the factory. This exploit being achieved, he made no secret of his design to deprive the English of all their settlements. With this view, he marched to Calcutta, at the head of a numerous army, and invested the place, which was then in no posture of defence. The governor, intimidated by the number and power of the enemy, abandoned the fort, and, with some principal persons residing in the settlement, took refuge on board a ship in the river, carrying along with them their most valuable effects, and the books of the company. Thus the defence of the place devolved on Mr Holwell, the second in command, who, with the assistance of a few gallant officers, and a very feeble garrison, maintained it with uncommon courage and resolution against several attacks, until he was overpowered by numbers, and the enemy had forced their way into the castle. Then he was obliged to submit; and the Suba or Viceroy promised, on the

word of a soldier, that no injury should be done to him or his garrison. Nevertheless, they were all driven, to the number of 146 persons of both sexes, into a place called the Black-hole prison, a cube of about eighteen feet, walled up to the eastward and southward, the only quarter from which they could expect the least refreshing air, and opened to the westward by two windows, strongly barred with iron, through which there was no perceptible circulation. The humane reader will conceive with horror the miserable situation, to which they must have been reduced, when thus stewed up, in a close sultry night, under such a climate as that of Bengal; especially when he reflects, that many of them were wounded, and all of them fatigued with hard duty. Transported with rage, to find themselves thus barbarously cooped up, in a place where they must be exposed to suffocation, those hapless victims endeavoured to force open the door, that they might rush upon the swords of the barbarians, by whom they were surrounded: but all their efforts were ineffectual; the door was made to open inwards, and being once shut upon them, the crowd, pressed upon it so strongly, as to render all their endeavours abortive. Then they were overwhelmed with distraction and despair. Mr Holwell, who had placed himself at one of the windows, accosted a jemautdaar, or serjeant of the Indian guard, and having endeavoured to excite his compassion, by drawing a pathetic picture of their sufferings, promised to gratify him with a thousand rupees in the morning, if he could find means to remove one-half of them into a separate apartment. The soldier, allured by the promise of such a reward, assured him that he would do his endeavour for their relief, and retired for that purpose; but in a few minutes returned, and told him that the Suba, by whose orders alone such a step could be taken, was asleep, and no person durst disturb his repose. By this time a profuse sweat had broke out on every individual; and this was attended with an insatiable thirst, which became the more intolerable as the body was drained of its moisture. In vain those miserable objects stripped themselves of their clothes,

squatted down on their hams, and fanned the air with their hats, to produce a refreshing undulation. Many were unable to rise again from this posture, but, falling down, were trode to death or suffocated. The dreadful symptom of thirst was now accompanied with a difficulty of respiration, and every individual gasped for breath. Their despair became outrageous: again they attempted to force the door, and provoke the guard to fire upon them, by execration and abuse. The cry of "Water! water!" issued from every mouth. Even the jemmutdaar was moved to compassion at their distress. He ordered his soldiers to bring them some skins of water, which served only to enrage the appetite, and increase the general agitation. There was no other way of conveying it through the windows but by hats; and this was rendered ineffectual, by the eagerness and transports of the wretched prisoners, who, at sight of it, struggled and raved even into fits of delirium. In consequence of these contests, very little reached those who stood nearest the windows: while the rest, at the further end of the prison, were totally excluded from all relief, and continued calling upon their friends for assistance, and conjuring them by all the tender ties of pity and affection. To those, who were indulged, it proved pernicious; for, instead of allaying their thirst, it enraged their impatience for more. The confusion became general and horrid; all was clamour and contest; those who were at a distance endeavoured to force their passage to the window, and the weak were pressed down to the ground, never to rise again. The inhuman ruffians without derived entertainment from their misery; they supplied the prisoners with more water, and held up lights close to the bars, that they might enjoy the inhuman pleasure of seeing them fight for the baneful indulgence.—Mr Holwell, seeing all his particular friends lying dead around him, and trampled upon by the living, finding himself wedged up so close as to be deprived of all motion, begged, as the last instance of their regard, that they would remove the pressure, and allow him to retire from the window, that he might die in quiet. Even in those dreadful circumstances,

which might be supposed to have levelled all distinction, the poor delirious wretches manifested a respect for his rank and character : they forthwith gave way, and he forced his passage into the centre of the place, which was not crowded so much, because by this time about one-third of the number had perished, and lay in little compass on the floor, while the rest still crowded to both windows. He retired to a platform, at the farther end of the room, and lying down upon some of his dead friends, recommended his soul to Heaven. Here his thirst grew insupportable ; his difficulty in breathing increased, and he was seized with a strong palpitation. These violent symptoms, which he could not bear, urged him to make another effort : he forced his way back to the window, and cried aloud, " Water ! for God's sake !" He had been supposed already dead by his wretched companions, but finding him still alive, they exhibited another extraordinary proof of tenderness and regard to his person : " Give him water," they cried ; nor would any of them attempt to touch it until he had drank. He now breathed more freely, and the palpitation ceased ; but, finding himself still more thirsty after drinking, he abstained from water, and moistened his mouth, from time to time, by sucking the perspiration from his shirt-sleeves.—The miserable prisoners, perceiving that water rather aggravated than relieved their distress, grew clamorous for air, and repeated their insults to the guard, loading the Suba and his governor with the most virulent reproaches. From railing they had recourse to prayer, beseeching Heaven to put an end to their misery. They now began to drop on all hands. Mr Holwell being weary of life, retired once more to the platform, and stretched himself by the Rev. Mr Jervis Bellamy, who, together with his son a lieutenant, lay dead in each other's embrace. In this situation he was soon deprived of sense, and lay to all appearance dead, till day broke, when his body was discovered, and removed by his surviving friends to one of the windows, where the fresh air revived him, and he was restored to his sight and senses. The Suba, at last, being informed that the greater part of

the prisoners were suffocated, inquired if the chief was alive: and, being answered in the affirmative, he (not from any sentiment of compassion, but from the hope that he would receive information from Mr Holwell of the place where certain alleged treasure was deposited), sent an order for their immediate release; when no more than twenty-three survived, of a hundred and forty-six, who had entered alive. *Smollett.*

PICTURE OF LA VENDEE BEFORE THE REVOLUTION.

[LA VENDEE is a district of France, which distinguished itself for its steady adherence to the line of its ancient sovereigns, at the period of the Revolution, which took place in the government of that unhappy country. The following picture—at once beautiful and comprehensive—of this district, as it existed previously to the Revolution, taken from a Review of the deeply-interesting Memoirs of the distinguished Madame De Larochejaquelein, has been selected as better adapted to the present work, than any single translated extract from the Memoirs themselves, of which it is an abstract. The like remark applies to the subsequent article.] A tract of about 150 miles square, at the mouth, and on the southern bank, of the Loire, comprehends the scene of those deplorable hostilities, which form the subject of these memoirs. The most inland part of the district, and that in which the insurrection first broke out, is called Le Bocage; and seems to have been almost as singular in its physical conformation, as in the state and condition of its population. A series of detached eminences, of no great elevation, rose over the whole face of the country, with little rills trickling in the hollows and occasional cliffs by their sides. The whole space was divided into small enclosures, each surrounded with tall wild hedges, and rows of pollard trees; so that, though there were very few large woods, the whole region had a sylvan and impenetrable appearance. The ground was mostly in pasturage; and the landscape had, for the most part an aspect of wild verdure, except that, in the autumn,

some patches of yellow corn appeared here and there athwart their green enclosures. Only two great roads traversed this sequestered region, running nearly parallel, at a distance of more than seventy miles from each other. In the intermediate space, there was nothing but a labyrinth of wild and devious paths crossing each other at the extremity of almost every field—often serving, at the same time, as channels for the winter torrents, and winding so capriciously among the innumerable hillocks, and beneath the meeting hedges, that the natives themselves were always in danger of losing their way, when they went a league or two from their own habitations. The country, though rather thickly peopled, contained, as may be supposed, few large towns; and the inhabitants, devoted almost entirely to rural occupations, enjoyed a great deal of leisure. The noblesse or gentry of the country were very generally resident on their estates, where they lived in a style of simplicity and homeliness, which had long disappeared from every other part of the kingdom. No grand parks, fine gardens, or ornamented villas; but spacious clumsy chateaus, surrounded with farm-offices, and cottages for labourers. Their manners and way of life, too, partook of the same primitive rusticity. There was great cordiality, and even much familiarity, in the intercourse of the landlords with their dependants. They were followed by large trains of them in their hunting-expeditions, which occupied so great a part of their time. Every man had his fowling-piece, and was a marksman of fame or pretensions. They were posted in various quarters, to intercept or drive back the game; and were thus trained, by anticipation, to that sort of discipline and concert in which their whole art of war was afterwards found to consist. Nor was their intimacy confined to their sports. The peasants resorted familiarly to their landlords for advice, both legal and medical: and they repaid the visits in their daily rambles, and entered with interest into all the details of their agricultural operations. They came to the weddings of their children, drank with their guests, and made little presents to the young people. On Sundays and holidays all

the retainers of the family assembled at the chateau, and danced in the barn, or the court-yard, according to the season. The ladies of the house joined in the festivity, and that without any airs of condescension or of mockery: for, in their own life, there was little splendour or luxurious refinement. They travelled on horseback, or in heavy carriages drawn by oxen; and had little other amusement than in the care of their dependants, and the familiar intercourse of neighbours, among whom there was no rivalry or principle of ostentation.—From all this there resulted, as Madame De L. assures us, a certain innocence, and kindness of character, joined with great hardihood and gayety, which carries with it an idea of something more chivalrous and romantic, more honest and unsophisticated, than any thing we expect to meet with, in this modern world of artifice and derision. There was great purity of morals, accordingly, and general cheerfulness and content in all this district; crimes were never heard of, and lawsuits almost unknown. Though not very well educated, the population was exceedingly devout; though theirs was a kind of superstitious and traditional devotion, it must be owned, rather than an enlightened or rational faith. They had the greatest veneration for crucifixes and images of their saints, and had no idea of any duty more imperious, than that of attending on all the solemnities of religion. They were singularly attached to their curés, who were almost all born and bred in the country, spoke their provincial dialect, and shared in all their pastimes and occupations. When a hunting-match was to take place, the clergyman announced it from the pulpit after prayers, and then took his fowling-piece, and accompanied his congregation to the thicket. It was in behalf of these curés, in part, that the first disturbances were excited. *Anonymous.*

SUFFERINGS OF THE VENDEAN ROYALISTS.

THE last great battle was fought near Chollet, when the insurgents, after a furious and sanguinary resist-

ance, were at last borne down by the multitude of their opponents, and driven down into the low country on the banks of the Loire. Not only the whole wreck of the army, but a great proportion of the men, women, and children of the country, flying in consternation from the burnings and butchery of the government forces, flocked down, in agony and despair, to the banks of this great river. On gaining the heights of St Florent, one of the most mournful, and, at the same time, most magnificent, spectacles burst upon the eye. These heights form a vast semicircle; at the bottom of which a broad bare plain extends to the edge of the water. Near a hundred thousand unhappy souls now blackened over that dreary expanse,—old men, infants, and women, mingled with the half-armed soldiery, caravans, crowded baggage-waggons, and teams of oxen, all full of despair, impatience, anxiety, and terror. Behind were the smokes of their burning villages, and the thunder of the hostile artillery: before, the broad stream of the Loire, divided by a long low island, also covered with the fugitives,—twenty frail barks plying in the stream,—and, on the far banks, the disorderly movements of those who had effected the passage, and were waiting there to be rejoined by their companions. Such, Madame De L. assures us, was the tumult and terror of the scene, and so awful the recollections it inspired, that it can never be effaced from the memory of any of those who beheld it; and that many of its awe-struck spectators have concurred in stating, that it brought forcibly to their imaginations the unspeakable terrors of the great day of judgment. Through this dismayed and bewildered multitude, the disconsolate family of their gallant general made their way silently to the shore;—M. De Lescure stretched, almost insensible, on a wretched litter,—his wife walking by his side,—and, behind her, her faithful nurse, with her helpless and astonished infant in her arms. When they arrived on the beach, they with difficulty got a crazy boat to carry them to the island; but the aged monk, who steered it, would not venture to cross the larger branch of the stream, and the poor wounded man was obliged to submit to the agony of another removal. At

length they were landed on the opposite bank, where wretchedness and desolation appeared still more conspicuous. Thousands of helpless wretches were lying on the grassy shore, or roaming about in search of the friends, from whom they had been divided. There was a general complaint of cold and hunger; and nobody in a condition to give any directions, or administer any relief. M. De L. suffered excruciating pain from the piercing air which blew upon his feverish frame,—the poor infant screamed for food,—and the helpless mother was left to minister to both,—while her attendant went among the burnt and ruined villages, to seek a drop of milk for the baby. At length they got again in motion for the adjoining village of Varades,—M. De L. borne, in a sort of chair, upon the pikes of his soldiers, with his wife and the maid-servant walking before him, and supporting his legs, wrapped up in their cloaks. With great difficulty they procured a little room, in a cottage swarming with soldiers,—most of them famishing for want of food, and yet still so mindful of the rights of their neighbours, that they would not take a few potatoes from the garden of the cottage, till Mad. De L. had obtained leave of the proprietor.—The day after they advanced towards Rennes. M. De L. could find no other conveyance than a baggage-waggon; at every jolt of which he suffered such anguish, as to draw forth the most piercing shrieks even from his manly bosom. After some time an old chaise was discovered; a piece of artillery was thrown away to supply it with horses, and the wounded general was laid in it,—his head being supported in the lap of Agatha, his mother's faithful waiting-woman, and now the only attendant of his wife and infant. In three painful days they reached Laval; Mad. De L. frequently suffering from absolute want, and sometimes getting nothing to eat during the whole day, but one or two sour apples. M. De L. was nearly insensible during the whole journey. He was roused but once, when there was a report that a party of the enemy were in sight. He then called for his musket, and attempted to get out of the carriage;—addressed exhortations and reproaches to the troops, that were flying

around him, and would not rest till an officer, in whom he had confidence, came up, and restored some order to the detachment. The alarm turned out to be a false one.—At Laval they halted for several days; and he was so much recruited by the repose, that he was able to get for half an hour on horseback, and seemed to be fairly in the way of recovery, when his excessive zeal and anxiety for the good behaviour of the troops tempted him to premature exertions, from the consequences of which he never afterwards recovered. The troops being all collected and refreshed at Laval, it was resolved to turn upon their pursuers, and give battle to the advancing army of the republic. The conflict was sanguinary, but ended most decidedly in favour of the Vendéans. This was the last grand crisis of the insurrection. The way to La Vendee was once more open, and the fugitives had it in their power to return triumphant to their fastnesses and their homes, after rousing Brittany by the example of their valour and success. Unfortunately, however, a difference of opinion prevailed amongst them with regard to the course which they should next pursue; and the republicans had time to rally, and bring up their reinforcements, before anything was definitively settled.—In the mean time M. De L. became visibly worse; and, one morning, when his wife alone was in the room, he called her to him, and prepared her for his approaching end. Next day they were under the necessity of moving forward; and, on the journey, he learned accidentally, from one of the officers, the dreadful details of the Queen's execution, which his wife had been at great pains to keep from his knowledge. This intelligence seemed to bring back his fever,—though he still spoke of living to avenge her:—"If I do live," he said, "it shall be for vengeance only,—no more mercy from me." That evening Mad. De L. entirely overcome with anxiety and fatigue, had fallen into a deep sleep on a mat before his bed; and, soon after, his condition became altogether desperate. He became speechless, and nearly insensible; the sacraments were administered, and various applications made, without awaking the unhappy sleeper by his side. Soon after midnight,

however, she started up, and instantly became aware of the full extent of her misery. To fill up its measure, it was announced, in the course of the morning, that they must immediately resume their march with the last division of the army. The dying man was roused only to heavy moanings by the pain of lifting him into the carriage,—where his faithful Agatha again supported his head, and a surgeon watched all the changes in his condition. Mad. De L. was placed on horseback ; and, surrounded by her father and mother, and a number of officers, went forward, scarcely conscious of all active exertion,—only that sometimes, in the bitterness of her heart, when she saw the dead bodies of the republican soldiers on the road, she made her horse trample upon them, as if in vengeance for the slaughter of her husband. In the course of little more than an hour she thought she heard some little stir in the carriage, and insisted upon stopping to inquire into the cause. The officers, however, crowded around her, and then her father came up, and said that M. De L. was in the same state as before, but that he suffered dreadfully from the cold, and would be much distressed, if the door was again to be opened. Obligated to be satisfied with this answer, she went on, in sullen and gloomy silence, for some hours longer, in a dark and rainy day of November. It was night when they reached the town of Fougères ; and, when lifted from her horse at the gate, she was unable either to stand or walk : she was carried into a wretched house, crowded with troops of all descriptions, where she waited two hours in agony, till she heard that the carriage with M. De L. was come up. She was left alone, for a dreadful moment, with her mother : and then M. De Beauvolliers came in, bathed in tears, and, taking both her hands, told her she must only now think of saving her child. Her husband had expired, when she heard the noise in the carriage, soon after their setting out,—and the surgeon had accordingly left it as soon as the order of the march had carried her ahead : but the faithful Agatha, fearful lest her appearance might alarm her mistress in the midst of the journey, had remained alone, in that dreadful situation, for all the rest

of the day.—Fatigue, grief, and anguish of mind now threatened Madame De L. with the most serious consequences. It was thought necessary to bleed her, and, after some difficulty, a surgeon was procured. She can never forget, she says, the formidable apparition of this warlike phlebotomist. A figure, six feet high, with ferocious whiskers, a great sabre at his side, and four huge pistols in his belt, stalked up, with a fierce and careless air, to her bedside; and, when she said she was timid about the operation, answered harshly, “So am not I,—I have killed three hundred men and upwards, in the field, in my time,—one of them only this morning,—I think, then, I may venture to bleed a woman,—come, come, let us see your arm.” She was bled accordingly,—and, contrary to all expectation, was pretty well again in the morning. She insisted, for a long time, on carrying the body of her husband in the carriage along with her,—but her father, after indulging her for a few days, contrived to fall behind with this precious deposit, and informed her, when he came up again, that it had been found necessary to bury it privately, in a spot which he would not specify.

Anonymous.

ADVENTURES OF A “FAIR BELGIAN.”

I HAD the good fortune to travel from Brussels to Paris, with a young Irish officer and his wife, an Antwerp lady of only sixteen; of great beauty, and much innocence and *naïveté* of manners. The officer had been in the battle of Quatre Bras as well as of Waterloo. An anecdote of his fair Belgian, which he justly took some pride in relating, will serve to give an idea of the kind of scenes then occurring, the horrors and the dangers of which it is so difficult to describe. He was living in cantonments at Nivelles, having his wife with him. The unexpected advance of the French called him off in a moment's notice to Quatre Bras; but he left his wife, with his servant, one horse, and the family baggage, which was packed upon a large ass. Retreat at the time was not anticipated; but,

being suddenly ordered on the Saturday morning, he contrived to get a message to his wife, to make the best of her way, attended by the servant, to Brussels. The servant, a foreigner, had availed himself of the opportunity to take leave of both master and mistress, and made off with the horse, which had been left for the use of the latter. With a firmness becoming the wife of a British officer, she boldly commenced on foot her own retreat of 25 miles, leading the ass, and carefully preserving the baggage. No violence was dared by any one to so innocent a pilgrim, but no one could afford to assist her. She was soon in the midst of the columns of the retreating British army, and much retarded and endangered by the artillery. Her fatigue was great; it rained in waterspouts, and the thunder and lightning were dreadful in the extreme. She continued to advance, and got upon the great road from Charleroi to Brussels at Waterloo, when the army on the Saturday evening were taking up their line for the awful conflict. In so extensive a field, and among 80,000 men, it was in vain to seek her husband; she knew that the sight of her *there* would only have embarrassed and distressed him: she kept slowly advancing to Brussels all the Saturday night, the way choked with all sorts of conveyances, waggons, and horses; multitudes of native fugitives on the road, and flying into the great wood; and numbers of the wounded working their painful way, dropping at every step, and breathing their last. Many persons were actually killed by others, in the desperate efforts of the latter to remove impediments to their escape; and, to add to the horrors, the rain continued unabated, and lightning still raged as if the heavens were torn to pieces. Full twelve miles further, in the night, this young woman marched, up to her knees in mud, her boots wore entirely off, so that she was barefooted: but, still unhurt, she continued to advance; and although thousands lost their baggage, and many their lives, she calmly entered Brussels in the morning in safety, and without the loss of an article. In a few hours after her arrival, commenced the cannons' roar of the tremendous Sunday, exposed to which, for ten hours, she knew her

husband to be ; and, after a day and night of agony, she was amply rewarded by finding herself in his arms, he unhurt, and she nothing the worse, on the Monday.
Simpson's Visit to Flanders.

WATERLOO.

FROM eleven in the morning till seven at night, the battle consisted of a succession of reiterated assaults, on the part of the French, with unabated fury, and increasing numbers, and often with a boldness and deadly effect, which perplexed our soldiers, and put their matchless firmness to the utmost trial. It may be believed that every fresh onset swept away multitudes of our infantry ; still the survivors gave not an inch of the ground, but made good the lines, and firm the squares. No men in Europe could have endured as they did. Again and again the enemy's cannon and cavalry rebounded from their "adamantine front," dismayed and scattered. These were the *breathing* times of our heroes ! Line was, with admirable alacrity, formed for a greater breadth of fire than the squares afforded, immediately on seeing the *back* plates of the cuirasses ; when masses of French infantry approached with a heavy fire of musketry. "They did go through their work," as Napoleon often muttered, "unlike any troops *he* had ever seen." Such were the visits of the cannon and cavalry, that, as I have repeatedly been assured by officers with whom I have conversed, these interludes of infantry battle were a kind of *refreshment* after their toil with the other arms ! They never took the trouble to look at the numbers ; they felt as if boys had attacked them, merely to keep them in wind : and invariably routed the columns by a very few steps in advance with pointed bayonets.—The duke, in visiting different points, was often received with shouts of impatience to be led on. The gallant 95th were very tired of the iron cases, and the iron grape-shot. An immense body of French infantry happened to approach that noble regiment at one time when the commander was paying them a visit ; "Let us at 'em, my Lord ;

let us down upon 'em," quite regardless of their numbers. "Not yet," replied the chief, "not yet, my brave men, but you shall have at them soon: firm a little longer; we must not be beat; what would they say in England?"—We directed our course westward along the British right wing. There was no difficulty in tracing the well defended line,—it was now a *line of graves*. The survivors never quitted it but to advance. The very ground was hallowed, and it was trode by us with respect and gratitude: the multitude below, so lately interred, occasioned a very impressive subject of reflection. If the unknown dead called forth these feelings, much more did the consciousness of standing on the spot, where some one known to us had "nobly fought and nobly died." We stood where the interesting Sir William De Lancy had met his death, when rallying, with great spirit and effect, a battalion of Hanoverians, which had got into confusion. He nobly refused to occupy the time of the surgeons with *his* wound, which he had heard them pronounce mortal, when they thought him insensible. He was removed to the village of Waterloo, where he died. This gallant young man's early name, and just favour with his commander, excited general and deep interest for his fate; and nowhere more than in Edinburgh, where he had been married only a few weeks before. Indeed the instances of heroic death were as numerous as they are affecting. Colonel Miller of the First Guards requested a sight of the colours, under which he had fought. He kissed them fervently, and begged they might be waved over him till he expired. The lamented Captain Curzon, Lord Scarsdale's son, met his fate with almost "military glee." In falling from his horse, he called out gaily to Lord March, who was riding with him at a gallop,—“Good b'ye, dear March:” and, by one effort more, when his friend had left him for the urgent duty of animating a foreign corps in very critical circumstances, he looked up, and cried, “Well done, dear March.”—The afflicting idea strongly occurred of the next day's horrors of such a field as Waterloo. Numbers of the desperately wounded and dying, in the midst of the dead, raised their

heads, when visitors to the scene passed them, to implore water, or to beg death at their hands, to end their agonies. Many of the wounded were not removed till the Wednesday, the third day after the battle.—All was now hushed in the stillness of the grave, the sad consummation which the wounded implored. No one, who has not seen it, can imagine how touching it is to see, strewed over the ground, fragments of what the brave men wore or carried when they fell. Among the straw of the trodden down corn, which still covered the field, lay caps, shoes, pieces of uniforms, and skirts, tufts, cockades, feathers, ornamental horse-hair, red and black, and, what most struck us, great quantities of letters and leaves of books. The latter were much too far defaced by rain and mud, to make it worth our while to lift any of them. In one letter we could just make out the words, so affecting in the circumstances, “My dear Husband.”—No part of the field was more fertile in impressive associations, than the ground of the 30th and 73d regiments, brigaded under our gallant countryman, severely wounded in the battle, Sir Colin Halket. To no square did the artillery, and particularly the cuirassiers, pay more frequent and tremendous visits; and never was it shaken for a moment. The almost *intimacy* of the soldiers with these death-bringing visitants, increased so much as the day advanced, that they began to recognise their faces. Their boldness much provoked our men. They galloped up to the bayonet-point; where, of course, their horses made a full stop, to the great danger of pitching their riders into the square. They then rode round and round the fearless bulwark of bayonets: and, in all the confidence of panoply, often coolly *walked* their horses, to have more time to search for some chasm in the ranks, where they might ride in. The balls absolutely rung upon their mail, and nothing incommoded the rider, except bringing down his horse, which at last became the general order. In that event, he surrendered himself, and was received within the square, till he could be sent prisoner to the rear,—a generosity ill-merited, when it is considered that the French spared very few lives, which it was in their power to take. Many offi-

cers were murdered *after* giving up their swords ; and, when prisoners were collected, cavalry were sent to cut them down, when circumstances at the moment prevented their removal.—The cuirassiers were repeatedly driven off by the 30th, and their comrade regiment ; reduced themselves, by painful degrees, more and more every attack. Line was always again formed with unwearied alacrity ; no complaint escaped the patient soldiers' lips, if we except an occasional cry to be led on. The storm was seen again gathering and rolling on. The serious command, " *Re-form square, prepare to receive cavalry,*" was promptly and accurately obeyed. The whole were prostrate on their breasts, to let the iron shower of the artillery fly over,—and erect in an instant, when the cannon ceased, and the cavalry charged. Their country do not know one-tenth of the merit of " *The men of Waterloo !*"—This gallant brigade was honoured with several visits from the illustrious chief. In one he inquired " *how they were,*" The answer was, that two-thirds of their number were down, and that the rest were so exhausted, that leave to retire, even for a short time, was most desirable ; some of the foreign corps, who had not suffered, to take their place. General H. was told that the issue depended on the unflinching front of the British troops ; and that even a change of place was hazardous in the extreme. He impressively said, " *Enough, my Lord, we stand here till the last man falls.*"—One anecdote more of this glorious brigade, I cannot withhold. A gleam of the gentler affections is hailed with tenfold sympathy, when, for a moment, it gilds an interval of the empire of the sterner virtues in the warrior's bosom. It is like the breathing of the softest flute after the clang of a thousand trumpets ; or the downy contact of the halcyon's breast, which stills the stormy sea. In the midst of their dangers, this band of heroes had their attention called to a very affecting scene of private friendship. Two of the officers were the more closely attached to each other, that they were not on terms of perfect good understanding with the rest of the mess ; owing to their having opposed some arrangements, which, it was expected, would be attended with some

expense ; and, at the same time, concealed most delicately the real grounds of their opposition to the general voice, that, besides their own families, they had each two sisters to support, a consideration which assuredly they could not have pleaded in vain. The similarity of their circumstances most naturally cemented their friendship : which was quite a by-word in the regiment. After doing their duty calmly through nearly the whole of the murderous day, they found themselves both unhurt at a late hour in the evening ; when one of them playfully called to the other, who stood at a little distance, " I always told you they never would hit me ; they never did it in Spain ; and they have not done it to-day." He had hardly spoke, when he was shot dead on the spot. His friend stood for a few moments motionless ; then burst into tears ; flew to the body, threw himself down beside it, and sobbed over it, inarticulately repeating several times, " My only friend !" The officer, who related the affecting story, told me, that so completely did the scene overcome every one who witnessed it, there was not a dry eye among them. *Simpson's Visit to Flanders.*

LOSS OF THE KENT EAST INDIAMAN BY FIRE IN THE
BAY OF BISCAY, MARCH 1, 1825.

I RECEIVED from Captain Spence, the captain of the day, the alarming information, that the ship was on fire in the after-hold. On hastening to the hatchway, whence smoke was slowly ascending, I found Captain Cobb and other officers already giving orders, which seemed to be promptly obeyed by the seamen and troops, who were using every exertion, by means of the pumps, buckets of water, wet sails, hammocks, &c., to extinguish the flames. With a view to excite among the ladies as little alarm as possible, in conveying this intelligence to Colonel Fearon, the commanding officer of the troops, I knocked gently at his cabin-door, and expressed a wish to speak with him ; but, whether my countenance betrayed the state of my feelings, or the increasing noise and confusion upon deck created

apprehensions among them, that the storm was assuming a more serious aspect, I found it difficult to pacify some of the ladies, by repeated assurances, that no danger whatever was to be apprehended from the gale. Soon after "The flames have reached the cable-tier," was exclaimed by some individuals, and the strong pitchy smell, that pervaded the deck, confirmed the truth of the exclamation. In these awful circumstances, Captain Cobb, with an ability and decision of character, that seemed to increase with the imminence of the danger, resorted to the only alternative now left him, of ordering the lower decks to be scuttled, the combings of the hatches to be cut, and the lower ports to be opened for the free admission of the waves. These instructions were speedily executed by the united efforts of the troops and seamen ; but not before some of the sick soldiers, one woman, and several children, unable to gain the upper deck, had perished. On descending to the gun-deck with Colonel Fearon, Captain Bray, and one or two other officers of the 31st regiment, to assist in opening the ports, I met, staggering towards the hatchway, in an exhausted and nearly senseless state, one of the mates, who informed us that he had just stumbled over the dead bodies of some individuals, who must have died from suffocation, to which, it was evident, that he himself had almost fallen a victim. So dense and oppressive was the smoke, that it was with the utmost difficulty we could remain long enough below to fulfil Captain Cobb's wishes ; which were no sooner accomplished, than the sea rushed in with extraordinary force, carrying away in its resistless progress to the hold, the largest chests, bulk-heads, &c. Such a sight, under any other conceivable circumstances, was well calculated to have filled us with horror ; but, in our natural solicitude to avoid the more immediate peril of explosion, we endeavoured to cheer each other, as we stood up to our knees in water, with a faint hope, that, by these violent means, we might be speedily restored to safety. The immense quantity of water, that was thus introduced into the hold, had indeed the effect, for a time, of checking the fury of the flames ; but, the danger of

sinking having increased, as the risk of explosion was diminished, the ship became water-logged, and presented other indications of settling, previous to her going down.—Death, in two of its most awful forms, now encompassed us, and we seemed left to choose the terrible alternative. But, always preferring the more remote, though equally certain crisis, we tried to shut the ports again, to close the hatches, and to exclude the external air, in order, if possible, to prolong our existence, the near and certain termination of which appeared inevitable. The scene of horror, that now presented itself, baffles all description.

Then rose, from sea to sky, the sad farewell;
Then shriek'd the timid, and stood still the brave.

The upper deck was covered with between six and seven hundred human beings, many of whom from previous sea-sickness were forced, on the first alarm, to flee from below, in a state of absolute nakedness, and were now running about in quest of husbands, children, or parents. While some were standing in silent resignation, or in stupid insensibility to their impending fate, others were yielding themselves up to the most frantic despair. Some, on their knees, were earnestly imploring, with significant gesticulations, and in noisy supplications, the mercy of Him, whose arm, they exclaimed, was at length outstretched to smite them; others were to be seen hastily crossing themselves, and performing the various external acts required by their peculiar persuasion; while a number of the older and more stout-hearted soldiers and sailors sullenly took their seats directly over the magazine, hoping, as they stated, that, by means of the explosion, which they every instant expected, a speedier termination might thereby be put to their sufferings. Several of the soldiers' wives and children, who had fled, for temporary shelter, into the after-cabins on the upper decks, were engaged in prayer, and in reading the scriptures with the ladies; some of whom were enabled, with wonderful self-possession, to offer to others those spiritual consolations, which a firm and intelligent trust in the Redeemer of the world appeared, at this awful hour, to impart to

their own breasts. Amongst the numerous objects that struck my observation at this period, I was much affected with the appearance and conduct of some of the dear children, who, quite unconscious, in the cuddy-cabins, of the perils that surrounded them, continued to play as usual with their little toys in bed, or to put the most innocent and unseasonable questions to those around them. To some of the older children, who seemed fully alive to the reality of the danger, I whispered, "Now is the time to put in practice the instructions you used to receive at the Regimental School, and to think of that Saviour, of whom you have heard so much." They replied, as the tears ran down their cheeks, "O Sir, we are trying to remember them, and we are praying to God." Several there were, who vowed in loud and piteous cries, that if the Lord God would spare their lives, they would thenceforward dedicate all their powers to his service; and not a few were heard to exclaim, in the bitterness of remorse, that the judgments of the Most High were justly poured out upon them for their neglected Sabbaths, and their profligate or profane lives: but the number of those was extremely small, who appeared to dwell either with lively hope or dread on the view of an opening eternity.—While we thus lay in a state of physical inertia, but with all our mental faculties in rapid and painful activity,—with the waves lashing furiously against the sides of our devoted ship, as if in anger with the hostile element, for not more speedily performing its office of destruction,—the binnacle was suddenly wrenched from its fastenings, and all the apparatus of the compass dashed to pieces upon the deck; on which, one of the young mates, emphatically regarding it for a moment, cried out, with the emotion so natural to a sailor under such circumstances, "What! is the Kent's compass really gone?" leaving the bystanders to form from that omen their own conclusions. One promising young officer of the troops was seen thoughtfully removing, from his writing case, a lock of hair, which he composedly deposited in his bosom; and another officer, procuring paper, &c. addressed a short communication to his father, which was after-

wards carefully enclosed in a bottle, in the hope that it might eventually reach its destination; with the view, as he stated, of relieving him from the long years of fruitless anxiety and suspense, which our melancholy fate would awaken, and of bearing his humble testimony, at a moment when his sincerity could scarcely be questioned, to the faithfulness of that God, in whose mercy he trusted, and whose peace he largely enjoyed in the tremendous prospect of immediate dissolution.

Narrative of a Passenger.

LOSS OF THE KENT (CONTINUED).

It was at this appalling instant, when "all hope, that we should be saved, was now taken away;" and when the letter referred to was about being committed to the waves, that it occurred to Mr Thomson, the fourth mate, to send a man to the fore-top, rather with the ardent wish, than the expectation, that some friendly sail might be discovered, on the face of the waters. The sailor, on mounting, threw his eyes round the horizon for a moment,—a moment of unutterable suspense,—and, waving his hat, exclaimed, "A sail on the lee bow." The joyful announcement was received with deep-felt thanksgivings, and with three cheers upon deck. Our flags of distress were instantly hoisted, and our minute-guns fired; and we endeavoured to bear down upon the stranger, which afterwards proved to be the *Cambria*, a small brig, of 200 tons burden,—Cook,—bound to Vera Cruz, having on board twenty or thirty Cornish miners, and other agents of the Anglo-Mexican Company.—For ten or fifteen minutes, we were left in doubt, whether the brig perceived our signals, or, perceiving them, was either disposed, or able to lend us any assistance. From the violence of the gale, it seems that the report of our guns was not heard; but the ascending volumes of smoke, from the ship, sufficiently announced the dreadful nature of our distress; and we had the satisfaction, after a short period of dark suspense, to see the brig hoist British colours, and crowd all sail to hasten to our relief. Although it was im-

possible, and would have been improper, to repress the rising hopes that were pretty generally diffused amongst us, by the unexpected sight of the Cambria, yet I confess, that, when I reflected on the length of period our ship had been already burning,—on the tremendous sea that was running,—on the extreme smallness of the brig, and the immense number of human beings to be saved,—I could only venture to hope that a few might be spared ; but I durst not for a moment contemplate the possibility of my own preservation. While Captain Cobb, Colonel Fearon, and Major Macgregor, of the 31st regiment, were consulting together, as the brig was approaching us, on the necessary preparations for getting out the boats, &c. one of the officers asked Major M. in what order it was intended the officers should move off ; to which the other replied, “ Of course, in funeral order ; ” which injunction was instantly confirmed by Colonel Fearon, who said, “ Most undoubtedly, the juniors first,—but see that any man is cut down who presumes to enter the boats, before the means of escape are presented to the women and children.”—To prevent the rush to the boats, as they were being lowered,—which, from certain symptoms of impatience, manifested both by soldiers and sailors, there was reason to fear,—some of the military officers were stationed over them with drawn swords. But, from the firm determination which these exhibited, and the great subordination observed, with few exceptions, by the troops, this proper precaution was afterwards rendered unnecessary.—Arrangements having been considerably made by Captain Cobb, for placing in the first boat, previous to letting it down, all the ladies, and as many of the soldiers’ wives, as it could safely contain, they hurriedly wrapped themselves up in whatever articles of clothing could be most conveniently found ; and I think, about two or half-past two o’clock, a most mournful procession advanced from the after-cabins to the starboard cuddy-port, outside of which the cutter was suspended. Scarcely a word was uttered,—not a scream was heard,—even the infants ceased to cry, as if conscious of the unspoken and unspeakable anguish, that was, at that instant, rending the hearts of their parting

parents; nor was the silence of voices in any way broken except in one or two cases, where the ladies plaintively entreated permission to be left behind with their husbands. But, on being assured that every moment's delay might occasion the sacrifice of a human life, they successively suffered themselves to be torn from the tender embrace; and, with the fortitude which never fails to characterize and adorn their sex, on occasions of overwhelming trial, were placed without a murmur in the boat, which was immediately lowered into a sea so tempestuous, as to leave us only "to hope against hope," that it should live in it for a single moment. [The interesting narrative proceeds to recount the difficulty and danger with which the boat was lowered into the sea, and the other perils which it, and its precious cargo, had to encounter, ere the latter was safely deposited in the "ark of refuge."] I have reason to know, that the feelings of oppressive delight, gratitude, and praise, experienced by the married officers and soldiers on being assured of the comparative safety of their wives and children, so entirely abstracted their minds from their own situation, as to render them, for a little while afterwards, totally insensible either to the storm that beat upon them, or to the active and gathering volcano that threatened every instant to explode under their feet.— Amid the conflicting feelings and dispositions manifested by the numerous actors in this melancholy drama, many affecting proofs were elicited of parental and filial affection, or of disinterested friendship, that seemed to shed a momentary *halo* around the gloomy scene. Two or three soldiers, to relieve their wives of a part of their families, sprang into the water with their children, and perished in their endeavours to save them. One young lady, who had resolutely refused to quit her father, whose sense of duty kept him at his post, was near falling a sacrifice to her filial devotion, not having been picked up by those in the boats, until she had sunk five or six times. Another individual, who was reduced to the frightful alternative of losing his wife or his children, hastily decided in favour of his duty to the former. His wife was accordingly saved, but his four children, alas! were left to perish. A fine fellow, a

soldier, who had neither wife nor child of his own, but who evinced the greatest solicitude for the safety of those of others, insisted on having three children lashed to him, with whom he plunged into the water ; not being able to reach the boat, he was again drawn into the ship with his charge, but not before two of the children had expired. Several of the soldiers flung themselves overboard, and sunk in their ill-judged and premature efforts for deliverance. One poor fellow of this number, a very respectable man, had actually reached the boat, and was raising his hand to lay hold on the gunnel, when the bow of the boat, by a sudden pitch, struck him on the head, and he instantly went down. There was a peculiarity attending this man's case, that deserves notice. His wife, to whom he was warmly attached, not having been of the allotted number of women to accompany the regiment abroad, resolved, in her anxiety to follow her husband, to defeat this arrangement, and accordingly repaired with the detachment to Gravesend ; where she ingeniously managed, by eluding the vigilance of the sentries, to get on board, and conceal herself for several days : and, although she was discovered and sent ashore at Deal, she contrived, a second time, with true feminine perseverance, to get between decks, where she continued to secrete herself until the morning of the fatal disaster. While the men were thus bent, in various ways, on self-preservation, one of the sailors, who had taken his post, with many others, over the magazine, awaiting, with great patience, the dreaded explosion, at last cried out, as if in ill humour that his expectation was likely to be disappointed, " Well ! if she won't blow up, I'll see if I can get away from her : " and instantly jumping up, he made the best of his way to one of the boats, which, I understand, he reached in safety. Directions were, at one period, given, that every man should tie a rope round his waist, by which he might afterwards attach himself to the rafts, should he be suddenly forced to take to the water. While the people were busily occupied in adopting this recommendation, I was surprised, I had almost said amused, by the singular delicacy of one of the Irish recruits, who, in searching for

a rope in one of the cabins, called out to me, that he could find none, except the cordage belonging to an officer's cot, and wished to know whether there would be any harm in his appropriating it to his own use.—The gradual removal of the officers was marked by a discipline the most rigid, and an intrepidity the most exemplary; none appearing to be influenced by a vain and ostentatious bravery, which, in cases of extreme peril, affords rather a presumptive proof of secret timidity than of fortitude; nor any betraying an unmanly or unsoldier-like impatience to quit the ship; but, with the becoming deportment of men, neither paralysed by, nor profanely insensible to, the accumulating dangers, that encompassed them, they progressively departed in the different boats with their soldiers;—they who happened to proceed first, leaving behind them an example of coolness that could not be unprofitable to those who followed. But the finest illustration of their conduct was displayed in that of their chief, whose ability and invincible presence of mind, under the complicated responsibility and anxiety of a commander, husband, and father, were eminently calculated, throughout this dismal day, to inspire all others with composure and fortitude. Never for a moment did Colonel Fearon seem to forget the authority, with which his sovereign had invested him: nor did any of his officers, as far as my observation went, cease to remember the relative situations, in which they were severally placed. I should, however, be guilty of injustice and unkindness, if I here omitted to bear my humble testimony to the manly behaviour of the East India Company's cadets, and other private passengers on board, who emulated the best conduct of the officers of the ship, and of the troops, and equally participated with them in all the hardships and exertions of the day. As an agreeable proof, too, of the subordination and good feeling, that governed the poor soldiers in the midst of their sufferings, I ought to state, that towards evening, when the melancholy groups, who were passively seated on the poop, exhausted by previous fatigue, anxiety, and fasting, were beginning to experience the pain of intolerable thirst, a box of oranges was accidentally discovered

by some of the men, who, with a degree of mingled consideration, respect, and affection, that could hardly have been expected at such a moment, refused to partake of the grateful beverage, until they had offered a share of it to their officers.—Towards the close of this mournful tragedy, backwardness, rather than an impatience to adopt the perilous and only means of escape that offered, became discernible on the part of the unhappy remnant still on board. Captain Cobb, in his immoveable resolution to be the last, if possible, to quit his ship, and in his generous anxiety for the preservation of every life intrusted to his charge, refused to seek the boat, until he again endeavoured to urge onward the few still around him, who seemed struck dumb and powerless with dismay. [The difficulties and dangers which so much alarmed these men are well described in the Narrative, and were such as had nearly proved fatal to the captain's own personal escape.] But, finding all his entreaties fruitless, and hearing the guns, whose tackle was burst asunder by the advancing flames, successively exploding in the hold, into which they had fallen,—this gallant officer, after having nobly pursued, for the preservation of others, a course of exertion, that has been rarely equalled either in its duration or difficulty, at last felt it right to provide for his own safety, by laying hold on the topping-lift, or rope that connects the driver-boom with the mizzen-top, and thereby getting over the heads of the infatuated men, who occupied the boom, unable to go either backward or forward, and ultimately dropping himself into the water. The means of escape, however, did not cease to be presented to the unfortunate individuals above referred to, long after Captain Cobb took his departure,—since one of the boats persevered in keeping its station under the Kent's stern, not only after all expostulation and entreaty with those on board had failed, but until the flames, bursting forth from the cabin windows, rendered it impossible to remain, without inflicting the greatest cruelty upon the individuals that manned it.—After the arrival of the last boat, the flames, which had spread along the upper deck and poop, ascended with the rapidity of lightning to the masts and

rigging, forming one general conflagration, that illuminated the heavens to an immense distance, and was strongly reflected upon several objects on board the brig. The flags of distress hoisted in the morning, were seen, for a considerable time, waving amid the flames, until the masts, to which they were suspended, successively fell, like stately steeples, over the ship's side. At last, about half-past one o'clock in the morning, the devouring element having communicated to the magazine, the long-threatened explosion was seen: and the blazing fragments of the once magnificent Kent were instantly hurried, like so many rockets, high into the air: leaving, in the comparative darkness that succeeded, the deathful scene of that disastrous day, floating before the mind, like some feverish dream. —[By a most extraordinary interposition of Providence, fourteen of the unhappy men left behind in the Kent, were, after the explosion, picked up from the wreck by the crew of the Caroline, a vessel on its passage from Egypt to Liverpool.] *Narrative of a Passenger.*

DISMAL ADVENTURE IN AN EGYPTIAN CAVERN.

[In the year 1813, Mr Legh, an English traveller, and his companions, having, in the course of a voyage down the Nile, been informed of the existence, near Manfalout, of certain caverns, containing the mummies of crocodiles, resolved to pay them a visit. For this purpose they engaged four Arabs to be their guides to the caverns, which were situate within the confines of the desert. A circular pit, about 18 feet in depth, brought them down to the level of the excavations: three of the Arabs descended with them, and, with lighted torches, they made their way through various winding passages, without finding any more than a few fragments of the crocodile mummies. The interesting circumstances which followed, are thus described by the traveller.]—Our curiosity was still unsatisfied. We had been wandering, for more than an hour, in low subterranean passages, and felt considerably fatigued by the irksomeness of the posture,

in which we had been obliged to move, and the heat of our torches, in those narrow and low galleries. But the Arabs spoke so confidently of succeeding in this second trial, that we were induced once more to attend them. We found the opening of the chamber, which we now approached, guarded by a trench of unknown depth, and wide enough to require a good leap. The first Arab jumped the ditch, and we all followed him. The passage we entered was extremely small, and so low in some places, as to oblige us to crawl flat on the ground, and almost always on our hands and knees. The intricacies of its windings resembled a labyrinth ; and it terminated at length in a chamber much smaller than that we had left ; but, like it, containing nothing to satisfy our curiosity. Our search hitherto had been fruitless : but the mummies might not be far distant ; another effort, and we might still be successful. The Arab, whom I followed, and who led the way, now entered another gallery, and we all continued to move in the same manner as before, each preceded by a guide. We had not gone far before the heat became excessive ; for my own part, I found my breathing extremely difficult, my head began to ache most violently, and I had a most distressing sensation of fulness about the breast. We felt that we had gone too far, and yet were almost deprived of the power of returning. At this moment the torch of the first Arab went out. I was close to him, and saw him fall on his side : he uttered a groan ; his legs were strongly convulsed ; and I heard a rattling noise in his throat ;—he was dead ! The Arab behind me, seeing the torch of his companion extinguished, and conceiving he had stumbled, passed me, advanced to his assistance and stooped. I observed him appear faint, totter, and fall in a moment :—he also was dead ! The third Arab came forward and made an effort to approach the bodies, but stopt short. We looked at each other in silent horror, the danger increased every instant ; our torches burnt faintly : our breathing became more difficult ; our knees tottered under us ; and we felt our strength nearly gone. There was no time to be lost. The American, Barthow, cried to us to take courage ; and

we began to move back as fast as we could. We heard the remaining Arab shouting after us, calling us Cafres, imploring our assistance, and upbraiding us with deserting him. But we were obliged to leave him to his fate, expecting every moment to share it with him. The windings of the passages, through which we had come, increased the difficulty of our escape ; we might take a wrong turn, and never reach the great chamber we had first entered. Even supposing we took the shortest road, it was but too probable our strength would fail us before we arrived. We had each of us separately, and unknown to one another, observed attentively the different shapes of the stones, which projected into the galleries we had passed, so that each had an imperfect clew to the labyrinth we had now to retrace. We compared notes, and only on one occasion had a dispute ; the American differing from my friend and myself. In this dilemma we were determined by the majority, and fortunately were right. Exhausted with fatigue and terror, we reached the edge of the deep trench, which remained to be crossed, before we got into the great chamber. Mustering all my strength I leaped, and was followed by the American. Smelt stood on the brink, ready to drop with fatigue. He called to us, " for God's sake to help him over the fosse, or at least to stop, if only for five minutes, to allow him to recover his strength." It was impossible. To stay was death, and we could not resist the desire to push on, and reach the open air. We encouraged him to summon all his force, and he cleared the trench. When we reached the open air, it was one o'clock. and the heat of the sun about 160°. Our sailors, who were waiting for us, had luckily a *bardak* full of water, which they sprinkled upon us : but, though a little refreshed, it was not possible to climb the sides of the pit ; they unfolded their turbans, and, slinging them round our bodies, drew us to the top. Our appearance alone without our guides naturally astonished the Arab, who had remained at the entrance of the cavern ; and he anxiously inquired for his friends. To have confessed they were dead, would have excited suspicion : he would have supposed we had murdered

them, and have alarmed the inhabitants of Amabdie to pursue us, and revenge the death of their friends. We replied, therefore, "they were coming, and were employed in bringing out the mummies we had found, which was the cause of their delay." We lost no time in mounting our asses, recrossed the Desert, and passed hastily by the village, to regain the ferry at Manfalout.

Legh.

[After this, the travellers, as may well be believed, embarked with all possible haste, but, being retarded by contrary wind, were overtaken by some Turks and Arabs, who carried them back to Manfalout, where the Arabs demanded vengeance for the murder of their friends. The magistrate, before whom they were carried, behaved to them very harshly in public, but in private advised and assisted them to escape. Being, however, a second time retarded by the wind, they were again brought back, and on this occasion, found, among their clamorous accusers, the Arab, whom they refused to assist in the cavern, by whom they were now charged with having murdered his companions by magic. But in consequence of a threatened appeal to the Pacha of Egypt, and the payment of two Spanish dollars to each of the widows of the unfortunate men, they were allowed to proceed on their voyage.]

FALL OF PART OF A MOUNTAIN IN SWITZERLAND.

[MANY of our young readers may have heard of those frightful avalanches of snow, which so often come thundering down from the lofty mountains of Switzerland; but perhaps few of them are aware of the danger, to which the inhabitants of Alpine districts are not unfrequently exposed, by the still more awful precipitation of the mountains themselves, into the valleys beneath. A signal catastrophe of this description took place in the year 1806, when a portion of the mountain of Rossberg, which had occupied a space twice as great as the city of Paris, descended at once, with the most dreadful devastation, into the Lake of Lowertz. Of this aw-

ful event, a traveller gives the following very interesting description.] The summer of 1806 had been very rainy, and on the 1st and 2d September it rained incessantly. New crevices were observed in the flank of the mountain; a sort of crackling noise was heard internally; stones started out of the ground; detached fragments of rocks rolled down the mountain. At two o'clock in the afternoon on the 2d of September, a large rock became loose, and in falling raised a cloud of black dust. Towards the lower part of the mountain the ground seemed pressed down from above; and, when a stick or a spade was driven in, it moved of itself. A man, who had been digging in his garden, ran away from fright at these extraordinary appearances. Soon a fissure, larger than all the others, was observed; insensibly it increased. Springs of water ceased all at once to flow; the pine-trees of the forest absolutely reeled; birds flew away screaming. A few minutes before five o'clock, the symptoms of some mighty catastrophe became still stronger; the whole surface of the mountain seemed to glide down, but so slowly as to afford time to the inhabitants to go away. An old man, who had often predicted some such disaster, was quietly smoking his pipe, when told by a young man running by, that the mountain was in the act of falling. He rose and looked out, but came into his house again, saying he had time to fill another pipe. The young man, continuing to fly, was thrown down several times, and escaped with difficulty. Looking back, he saw the house carried off all at once.—Another inhabitant, being alarmed, took two of his children, and ran away with them, calling to his wife to follow with the third; but she went in for another, who still remained, Marianne aged five. Just then Francisca Ulrich, their servant, was crossing the room with this Marianne, whom she held by the hand, and saw her mistress. At that instant, as Francisca afterwards said, "The house appeared to be torn from its foundation (it was of wood), and spun round and round like a tetotum: I was sometimes on my head, sometimes on my feet, in total darkness, and violently separated from the child." When the motion stopped, she found herself jammed in on all

sides, with head downwards, much bruised, and in extreme pain. She supposed she was buried alive, at a great depth. With much difficulty she disengaged her right hand, and wiped the blood from her eyes. Presently she heard the faint moans of Marianne, and called to her by her name. The child answered that she was on her back, among stones and bushes, which she held fast; but that her hands were free, and that she saw the light, and even something green. She asked whether people would not soon come to take them out. Francisca answered that it was the day of judgment, and that no one was left to help them, but that they would be released by death, and be happy in heaven. They prayed together. At last Francisca's ear was struck by the sound of a bell, which she knew to be that of Stenenberg. Then seven o'clock struck in another village, and she began to hope there were still living beings, and endeavoured to comfort the child. The poor little girl was at first clamorous for her supper, but her cries soon became fainter, and at last quite died away. Francisca, still with her head downwards, and surrounded with damp earth, experienced a sense of cold in her feet almost insupportable. After prodigious efforts, she succeeded in disengaging her legs, and thinks this saved her life. Many hours had passed in this situation, when she again heard the voice of Marianne, who had been asleep, and now renewed her lamentations. In the mean time, the unfortunate father, who with much difficulty had saved himself and two children, wandered about till daylight, when he came among the ruins to look for the rest of his family. He soon discovered his wife, by a foot which appeared above ground. She was dead, with a child in her arms. His cries, and the noise he made in digging, were heard by Marianne, who called out. She was extricated with a broken thigh; and, saying that Francisca was not far off, a further search led to her release also, but in such a state that her life was despaired of. She was blind for some days, and remained subject to convulsive fits of terror. It appeared that the house, or themselves at least, had been carried down about 1500 feet from where it stood before.—In another place, a child two

years old was found unhurt, lying on its straw mattress upon the mud, without any vestige of the house, from which he had been separated. Such a mass of earth and stone rushed at once into the Lake of Lowertz, although five miles distant, that one end of it was filled up; and a prodigious wave passing completely over the island of Schwanaw, seventy feet above the usual level of the water, overwhelmed the opposite shore, and, as it returned, swept away into the lake many houses with their inhabitants. *Simond.*

MR JAMES FERGUSON'S ACCOUNT OF HIMSELF.

I WAS born in the year 1710, a few miles from Keith, a little village in Banffshire in the north of Scotland, and can with pleasure say that my parents, though poor, were religious and honest; lived in good repute with all who knew them; and died with good characters. As my father had nothing to support a large family, but his daily labour, and the profits arising from a few acres of land which he rented, it was not to be expected, that he could bestow much on the education of his children; yet they were not neglected; for, at his leisure hours, he taught them to read and write. And it was while he was teaching my elder brother to read the Scotch Catechism, that I acquired my reading. Ashamed to ask my father to instruct me, I used, when he and my brother were abroad, to take the catechism and study the lesson, which he had been teaching my brother; and, when any difficulty occurred, I went to a neighbouring old woman, who gave me such help, as enabled me to read tolerably well, before my father had thought of teaching me. Some time after, he was agreeably surprised to find me reading by myself; he thereupon gave me further instruction, and also taught me to write, which, with about three months I afterwards had at the grammar-school at Keith, was all the education I ever received.—My taste for mechanics arose from an odd accident. When about seven or eight years of age, a part of the roof of the house being decayed, my father, desirous of mending it, applied a prop

and lever to an upright spar, to raise it to its former situation; and, to my great astonishment, I saw him, without considering the reason, lift up the ponderous roof as if it had been a small weight. I attributed this, at first, to a degree of strength, that excited my terror, as well as wonder; but, thinking further of the matter, I recollected that he had applied his strength to that end of the lever which was farthest from the prop; and finding, on inquiry, that this was the means, whereby the seeming wonder was effected, I began making levers (which I then called bars), and, by applying weights to them different ways, I found the power, gained by my bar, was just in proportion to the lengths of the different parts of the bar, on either side of the prop. I then thought it was a great pity, that, by means of this bar, a weight could be raised but a very little way. On this, I soon imagined that, by pulling round a wheel, the weight might be raised to any height, by tying a rope to the weight, and winding the rope round the axle of the wheel; and that the power gained must be just as great, as the wheel was broader than the axle was thick; and found it to be exactly so, by hanging one weight to a rope put round the wheel, and another to the rope that coiled round the axle; so that, in these two machines, it appeared very plain, that their advantage was as great, as the space gone through by the working power exceeded the space gone through by the weight; and this property, I also thought, must take place in a wedge for cleaving wood: but then I happened not to think of the screw. By means of a turning-lathe, which my father had, and sometimes used, and a little knife, I was enabled to make wheels, and other things necessary for my purpose. I then wrote a short account of these machines, and sketched out figures of them with a pen, imagining it to be the first treatise of the kind, that ever was written; but found my mistake, when I afterwards showed it to a gentleman, who told me that these things were known long before, and showed me a printed book, in which they were treated of: and I was much pleased, when I found that my account (so far as I had carried it) agreed with the principles of mechanics in the book he showed me. —But as my father could not afford to maintain me,

while I was in pursuit only of these matters, and I was rather too young and weak for hard labour, he put me out to a neighbour to keep sheep, which I continued to do for some years; and in that time, I began to study the stars in the night. In the daytime, I amused myself by making models of mills, spinning-wheels, and such other things as I happened to see.—I then went to serve a considerable farmer in the neighbourhood, whose name was James Glashan. I found him very kind and indulgent; but he soon observed, that, when my work was over, I went into a field, with a blanket about me, lay down on my back, and stretched a thread with small beads upon it, at arm's length, between my eye and the stars, sliding the beads upon it, till they hid such and such stars from my eye, in order to take their apparent distances from one another, and then laying the thread down on a paper, I marked the stars thereon by the beads, according to their respective positions, having a candle by me. My master at first laughed at me, but, when I explained my meaning to him, he encouraged me to go on; and, that I might make fair copies in the daytime, of what I had done in the night, he often worked for me himself. I shall always have a respect for the memory of that man.—One day he happened to send me with a message to the Reverend Mr John Gilchrist, minister at Keith, to whom I had been known from my childhood. I carried my star-papers, to show them to him, and found him looking over a large parcel of maps, which I surveyed with great pleasure, as they were the first I had ever seen. He then told me that the earth is round like a ball, and explained the map of it to me. I requested him to lend me that map, to take a copy of it in the evenings. He cheerfully consented to this, giving me, at the same time, a pair of compasses, a ruler, pens, ink, and paper: and dismissed me with an injunction, not to neglect my master's business by copying the map, which I might keep as long as I pleased. For this pleasant employment my master gave me more time, than I could reasonably expect; and often took the thrashing-flail out of my hands, and worked himself, while I sat by him in the barn, busy with my compasses, ruler, and pen.

When I had finished the copy, I asked leave to carry home the map ; he told me I was at liberty to do so, and might stay two hours to converse with the minister. In my way thither, I happened to pass by the school, at which I had been before, and saw a genteel-looking man (whose name I afterwards learned was Cantley), painting a sundial on the wall. I stopped a while to observe him, and the schoolmaster came out, and asked me what parcel it was, that I had under my arm. I showed him the map, and the copy I had made of it, wherewith he appeared to be very well pleased, and asked me, whether I should not like to learn of Mr Cantley to make sundials. Mr Cantley looked at the copy of the map, and commended it much ; telling the schoolmaster (Mr John Skinner) that it was a pity I did not meet with notice and encouragement. I had a good deal of conversation with him, and found him to be quite affable and communicative, which made me think I should be extremely happy, if I could be further acquainted with him.—I then proceeded with the map to the minister, and showed him the copy of it. While we were conversing together, a neighbouring gentleman, Thomas Grant, Esq. of Achoyanney, happened to come in ; and the minister immediately introduced me to him, showing him what I had done. He expressed great satisfaction, asked me some questions about the construction of maps, and told me, that, if I would go and live at his house, he would order his butler, Alexander Cantley, to give me a great deal of instruction. Finding that this Cantley was the man, whom I had seen painting the sundial, and of whom I had already conceived a very high opinion, I told Squire Grant that I would rejoice to be at his house, as soon as the time was expired, for which I was engaged with my present master. He very politely offered to put one in my place, but this I declined.—When the term of my servitude was out, I left my good master, and went to the gentleman's house (1730), where I quickly found myself with a most humane good family. Mr Cantley the butler soon became my friend, and continued so till his death. He was the most extraordinary man, that I ever was acquainted with, or perhaps

ever shall see ; for he was a complete master of arithmetic ; a good mathematician ; a master of music on every known instrument except the harp ; understood Latin, French, and Greek ; let blood extremely well ; and could even prescribe as a physician upon any urgent occasion. He was what is generally called *self-taught* ; but I think he might, with much more propriety, have been termed GOD ALMIGHTY's scholar. He immediately began to teach me decimal arithmetic and algebra ; for I had already learned vulgar arithmetic, at my leisure hours, from books. He then proceeded to teach me the elements of geometry ; but, to my inexpressible grief, just as I was beginning that branch of science, he left Mr Grant, and went to the late Earl of Fife's, at several miles distance. The good family I was then with could not prevail with me to stay after he was gone : so I left them, and went to my father's.—He had made me a present of Gordon's Geographical Grammar, which, at that time, was to me a great treasure. There is no figure of a globe in it, although it contains a tolerable description of the globes, and their use. From this description I made a globe in three weeks at my father's, having turned the ball thereof out of a piece of wood, which ball I covered with paper, and delineated a map of the world upon it : made the meridian ring and horizon of wood, covered them with paper and graduated them : and was happy to find, that, by my globe (which was the first I ever saw), I could solve the problems. But this was not likely to afford me bread, and I could not think of staying with my father, who, I knew full well, could not maintain me in that way, as it would be of no service to him : and he had, without my assistance, hands sufficient for all his work. I then went to a miller, thinking it would be a very easy business to attend the mill, and that I should have a great deal of leisure time to study decimal arithmetic and geometry. But my master, being too fond of tipping at an alehouse, left the whole care of the mill to me, and almost starved me for want of victuals ; so that I was glad when I could have a little oatmeal, mixed with cold water, to eat. I was engaged for a year in this man's service, at the end of

which I left him, and returned, in a very weak state, to my father's. *Ferguson.*

MR FERGUSON'S ACCOUNT OF HIMSELF (CONTINUED).

SOON after I had recovered my former strength, a neighbouring farmer, who practised as a physician in that part of the country, came to my father's, wanting to have me as a labouring servant. My father advised me to go to Dr Young, telling me that the doctor would instruct me in that part of his business. This he promised to do, which was a temptation to me. But, instead of performing his promise, he kept me constantly to very hard labour, and never once showed me one of his books. All his servants complained, that he was the hardest master they had ever lived with; and it was my misfortune to be engaged with him for half a year. But, at the end of three months, I was so much overwrought, that I was almost disabled, which obliged me to leave him; and he was so unjust as to give me nothing at all for the time I had been with him, because I did not complete my half-year's service; though he knew that I was not able, and had seen me working, for the last fortnight, as much as possible with one hand and arm, when I could not lift the other from my side. And, what I thought was particularly hard, he never once tried to give me the least relief, further than once bleeding me, which rather did me hurt than good, as I was very weak, and much emaciated. I then went to my father's, where I was confined for two months, on account of my hurt, and despaired of ever recovering the use of my left arm. And during all that time, the doctor never once came to see me, although the distance was not quite two miles. But my friend Mr Cantley, hearing of my misfortune at twelve miles distance, sent me proper medicines and applications, by means of which I recovered the use of my arm: but found myself too weak to think of going into service again, and had entirely lost my appetite, so that I could take nothing but a draught of milk once a-day for many weeks. In order

to amuse myself in this low state, I made a wooden clock, the frame of which was also of wood ; and it kept time pretty well. The bell, on which the hammer struck the hours, was the neck of a broken bottle. Having then no idea how any time-keeper could go but by a weight and line, I wondered how a watch could go in all positions ; and was sorry that I had never thought of asking Mr Cantley, who could very easily have informed me. But happening one day to see a gentleman ride by my father's house, I asked him what o'clock it then was ; he looked at his watch and told me. As he did that with so much good nature, I begged of him to show me the inside of his watch : and though he was an entire stranger, he immediately opened the watch, and, having put it into my hands, explained every thing I wished to know regarding it. I thanked the gentleman, and told him that I now understood the thing very well. I then tried to make a watch with wooden wheels, and made the spring of whalebone : but found that I could not make the watch go when the balance was put on, because the teeth of the wheels were rather too weak to bear the force of a spring sufficient to move the balance ; although the wheels would run fast enough when the balance was taken off. I enclosed the whole in a wooden case, very little bigger than a breakfast teacup : but a clumsy neighbour, one day looking at my watch, happened to let it fall ; and turning hastily about to pick it up, set his foot upon it, and crushed it all to pieces ; which so provoked my father that he was almost ready to beat the man ; and discouraged me so much, that I never attempted to make such a machine again, especially as I was thoroughly convinced I could never make one, that would be of any real use.—As soon as I was able to go abroad, I carried my globe, clock, and copies of some other maps, besides that of the world, to the late Sir James Dunbar of Durn (about seven miles from where my father lived,) as I had heard that Sir James was a very good-natured, friendly, inquisitive gentleman. He received me in a very kind manner, was pleased with what I showed him, and desired that I would clean his clocks. This, for the first time, I attempted ; and then began

to pick up some money in that way about the country, making Sir James's house my home at his desire.—Two large globular stones stood on the top of his gate: on one of them I painted (with oil-colours,) a map of the terrestrial globe, and on the other a map of the celestial, from a planisphere of the stars, which I copied on paper, from a celestial globe belonging to a neighbouring gentleman. The enlightened parts of the terrestrial globe answered to the like enlightened parts of the earth at all times: so that, whenever the sun shone on the globe, one might see to what places the sun was then rising, to what places it was setting, and all the places where it was then day or night, throughout the earth.—During the time I was at Sir James's hospitable house, his sister, the Honourable the Lady Dipple, came there on a visit, and Sir James introduced me to her. She asked me whether I could draw patterns for needlework on aprons and gowns. On showing me some, I undertook the work, and drew several for her; some of which were copied from her patterns, and the rest I did according to my own fancy. On this I was sent for by other ladies in the country, and began to think myself growing very rich, by the money I got for such drawings; out of which I had the pleasure of occasionally supplying the wants of my poor father.—Yet, all this while, I could not leave off star-gazing in the nights, and taking the places of the planets among the stars, by my above-mentioned thread. By this I could observe how the planets changed their places among the stars, and delineated their paths on the celestial map, which I had copied from the above-mentioned celestial globe. By observing what constellations the ecliptic passed through in that map, and comparing these with the starry heaven, I was so impressed, as sometimes to imagine that I saw the ecliptic in the heaven, among the stars, like a broad circular road for the sun's apparent course; and fancied the paths of the planets to resemble the narrow ruts made by cart-wheels, sometimes on one part of a plain road, and sometimes on the other, crossing the road at small angles, but never going far from either side of it.—Sir James's house was full of pictures and prints, several of which I

copied with pen and ink ; this made him think I might become a painter. Lady Dipple had been but a few weeks there, when William Baird, Esq. of Auchmeddan, came on a visit ; he was the husband of one of that lady's daughters, and I found him to be very ingenious and communicative ; he invited me to go to his house, and stay some time with him, telling me that I should have free access to his library, which was a very large one ; and that he would furnish me with all sorts of implements for drawing. I went thither, and staid about eight months ; but was much disappointed at finding hardly any books of astronomy in his library, although there were many books on geography, and other sciences. Several of these, indeed, were in Latin, and more in French ; which being languages that I did not understand, I had recourse to him for what I wanted to know of these subjects, which he cheerfully read to me ; and it was as easy for him, at sight, to read English from a Greek, Latin, or French book, as from an English one. He furnished me with pencils and Indian ink ; and, although he had but an indifferent hand at that work, yet he was a very acute judge ; and consequently a very fit person for showing me how to correct my own work. He was the first who ever sat to me for a picture ; and I found it was much easier to draw from the life than from any picture whatever, as nature was more striking than any imitation of it.

Ferguson.

Mr Ferguson continues this very interesting account of himself by stating, that the first attempts, which were made to forward his success as a painter, entirely failed ; but that afterwards, through the kindness of the Reverend Dr Robert Keith at Edinburgh, to whose notice he was recommended by his good friend Mr Baird, "he soon had as much business as he could possibly manage, so as not only to put a good deal of money in his own pocket, but also to spare what was sufficient to help to supply his father and mother in their old age ; and thus a business was providentially put into his hands, which he followed for six and twenty years." But, with the exception of a year or two, during which

he took a fancy for studying medicine, he never abandoned his astronomical pursuits. At length, by ardent zeal, and persevering diligence, this shepherd-boy came to be ranked among the philosophers of his day,—was admitted, in a manner peculiarly honourable, to a place in the Royal Society of London, and in the American Philosophical Society,—delivered lectures on experimental philosophy, which were frequently honoured with the presence of his sovereign, who distinguished him by numerous marks of his favour,—and his works continue to instruct succeeding generations, as well as to gild his own once humble name. “Mr Ferguson,” observes Dr Brewster, “possessed a clear judgment, and was capable of thinking and writing on philosophical subjects, with great accuracy and precision. He had a peculiar talent for simplifying what was complex, for rendering intelligible what was abstracted, and for bringing down, to the lowest capacities, what was naturally above them. His unwearied assiduity in the acquisition of knowledge may be inferred from the great variety of his publications. In his manners, he was affable and mild; in his dispositions, communicative and benevolent. His religious character corresponded with his general conduct. The anxieties and changes of his eventful life never effaced the religious impressions of his youth, but rather strengthened those principles of duty, which the piety of his parents had early implanted; and confirmed him in the belief of those peculiar doctrines of our faith, which are the surest foundation of moral practice, and best fitted to inspire us with confidence, when the concerns of the present life must cease to interest us.”

CHARACTER OF MR JAMES WATT.

MR JAMES WATT, the great improver of the steam-engine, died on the 25th of August 1819, at his seat of Heathfield near Birmingham, in the 84th year of his age. This name fortunately needs no commemoration of ours, for he that bore it survived to see it crowned with undisputed and unenvied honours; and many ge-

nerations will probably pass away, before it shall have "gathered all its fame." We have said that Mr Watt was the great *improver* of the steam-engine; but, in truth, as to all that is admirable in its structure, or vast in its utility, he should rather be described as its *inventor*. It was by his invention that its action was so regulated, as to make it capable of being applied to the finest and most delicate manufactures, and its power so increased, as to set weight and solidity at defiance. By his admirable contrivances, it has become a thing stupendous alike for its force and its flexibility,—for the prodigious power which it can exert, and the ease, and precision, and ductility, with which it can be varied, distributed, and applied. The trunk of an elephant, that can pick up a pin, or rend an oak, is as nothing to it. It can engrave a seal, and crush masses of obdurate metal before it,—draw out, without breaking, a thread as fine as gossamer, and lift up a ship of war, like a bauble, in the air. It can embroider muslin, and forge anchors,—cut steel into ribands, and impel loaded vessels against the fury of the winds and waves.—It would be difficult to estimate the value of the benefits, which these inventions have conferred upon the country. There is no branch of industry, that has not been indebted to them; and, in all the most material, they have not only widened most magnificently the field of its exertions, but multiplied a thousand-fold the amount of its productions. Our improved steam-engine has increased indefinitely the mass of human comforts and enjoyments, and rendered cheap and accessible, all over the world, the materials of wealth and prosperity. It has armed the feeble hand of man, in short, with a power to which no limits can be assigned, completed the dominion of mind over the most refractory qualities of matter, and laid a sure foundation for all those future miracles of mechanic power, which are to aid and reward the labours of after generations. It is to the genius of one man, too, that all this is mainly owing; and certainly no man ever before bestowed such a gift on his kind. The blessing is not only universal, but unbounded; and the fabled inventors of the plough, and the loom, who were deified by the erring

gratitude of their rude contemporaries, conferred less important benefits on mankind, than the inventor of our present steam-engine.—Independently of his great attainments in mechanics, Mr Watt was an extraordinary, and, in many respects, a wonderful man. Perhaps no individual in his age possessed so much, and such varied and exact information,—had read so much, or remembered what he read so accurately and well. That he should have been minutely and extensively skilled in chemistry and the arts, and in most of the branches of physical science, might perhaps have been conjectured : but it could not have been inferred from his usual occupations, and probably is not generally known, that he was curiously learned in many branches of antiquity, metaphysics, medicine, and etymology ; and perfectly at home in all the details of architecture, music, and law. He was well acquainted, too, with most of the modern languages, and familiar with their most recent literature.—His astonishing memory was aided, no doubt, in a great measure, by a still higher and rarer faculty,—by his power of digesting and arranging, in its proper place, all the information he received, and of casting aside and rejecting, as it were, instinctively, whatever was worthless or immaterial. He never appeared, therefore, to be at all encumbered or perplexed with the *verbiage* of the dull books he perused, or the idle talk to which he listened ; but to have at once extracted, by a kind of intellectual alchemy, all that was worthy of attention, and to have reduced it, for his own use, to its true value, and to its simplest form.—It is needless to say, that, with those vast resources, his conversation was, at all times, rich and instructive, in no ordinary degree ; but it was, if possible, still more pleasing than wise, and had all the charms of familiarity, with all the substantial treasures of knowledge. No man could be more social in his spirit, less assuming or fastidious in his manners, or more kind and indulgent towards all who approached him. He rather liked to talk,—at least in his latter years ; but, though he took a considerable share of the conversation, he rarely suggested the topics, on which it was to turn, but readily and quietly took up whatever

was presented by those around him, and astonished the idle and barren propounders of an ordinary theme, by the treasures which he drew from the mine they had unconsciously opened. He generally seemed, indeed, to have no choice or predilection for one subject of discourse rather than another ; but allowed his mind, like a great cyclopædia, to be opened at any letter his associate might choose to turn up, and only endeavoured to select, from his inexhaustible stores, what might be best adapted to the taste of his present hearers. As to their capacity, he gave himself no trouble ; and, indeed, such was his singular talent for making all things plain, clear, and intelligible, that scarcely any one could be aware of such a deficiency in his presence. His talk, too, though overflowing with information, had no resemblance to lecturing or solemn discoursing, but on the contrary was full of colloquial spirit and pleasantry. He had a certain quiet and grave humour, which ran through most of his conversation, and a vein of temperate jocularity, which gave infinite zest and effect to the condensed and inexhaustible information, which formed its main staple and characteristic. There was a little air of affected testiness, and a tone of pretended rebuke and contradiction, with which he used to address his younger friends, that was always felt by them as an endearing mark of his kindness and familiarity,—and prized, accordingly, far beyond all the solemn compliments, that ever proceeded from the lips of authority.—He had, in his character, the utmost abhorrence for all sorts of forwardness, parade, and pretensions ; and, indeed, never failed to put all such impostures out of countenance, by the manly plainness and honest intrepidity of his language and deportment.—In his temper and dispositions, he was not only kind and affectionate, but generous and considerate of the feelings of all around him, and gave the most liberal assistance and encouragement to all young persons, who showed any indications of talent, or applied to him for patronage or advice.—He preserved, up almost to the last moment of his existence, not only the full command of his extraordinary intellect, but all the alacrity of spirit, and the social gayety, which had illuminated his happiest

days. But a short time before his death he applied himself, with all the ardour of early life, to the invention of a machine for mechanically copying all sorts of sculpture and statuary,—and distributed among his friends some of its earliest performances, as the productions of a young artist, just entering on his eighty-third year.—This happy and useful life came at last to a gentle close. He had suffered some inconvenience through the summer, but was not seriously indisposed till within a few weeks from his death. He then became perfectly aware of the event which was approaching: and, with his usual tranquillity and benevolence of nature, seemed only anxious to point out, to the friends around him, the many sources of consolation, which were afforded by the circumstances, under which it was about to take place. He expressed his sincere gratitude to Providence for the length of days, with which he had been blessed, and his exemption from most of the infirmities of age, as well as for the calm and cheerful evening of life, that he had been permitted to enjoy, after the honourable labours of the day had been concluded. And thus, full of years and honours, in all calmness and tranquillity, he yielded up his soul, without pang or struggle,—and passed from the bosom of his family to that of his God!

Jeffrey.

SECTION V.

MISCELLANEOUS PASSAGES.

ON THE NECESSITY OF COMBINING RELIGIOUS WITH
SCIENTIFIC EDUCATION ;

Being Extracts from a Sermon, preached in St Paul's Chapel, Edinburgh, on occasion of a collection for behoof of the Edinburgh Sessional School, and the other Parochial Institutions, of the City.

You are all aware of the great efforts, which have been lately made, and are now making, for the education of the lower orders of our people,—for their instruction in the elementary principles of science, and the communication to them of that philosophical knowledge, which has hitherto been confined to the learned and the affluent. Of the purpose of this benevolent attempt, or of its consequences in improving the *intellectual* character of our people, it is impossible to speak without respect and approbation. But there is another view of the subject, which every wise and thoughtful man will take: there is a danger, I fear, which experience will but too well justify, that will immediately suggest itself to every pious and Christian mind.—That every science leads *naturally* to religious belief, I am most willing to allow. But it cannot be said that it leads *necessarily* to it; or that to give the young the principles of *science* is, at the same time, to give them the principles of *religion*. On the contrary, if the system of education is entirely *scientific*,—if the minds of the young are not *directly* led to the religious conclusions which the subject suggests,—they will, in most cases, be either unobserved, or unfelt. And, at all events, even although this higher object of education *were* pursued, it is to the conclusions of *natural religion* alone they lead, and the young would necessarily re-

main altogether ignorant of all that constitutes *the religion of the Gospel*. It *might* happen, therefore (and who will say that it *would not* happen), in these cases, as it has so often done in the education of the higher orders of society, that knowledge would be acquired at the expense of religion ;—that the pride of science would obliterate the humility of piety :—that, while the intellectual powers of the young were thus artificially improved, their moral and religious powers would, in the same proportion, be neglected ;—that the light of revelation would be quenched amid the glare of human knowledge ;—and that society, at last, would arrive at its most brilliant and its most disastrous state, that of *external* splendour and refinement, and *internal* infidelity and corruption.—Now, it is to meet this great, and not imaginary danger, that the institution you are now called upon to befriend, is wisely calculated ; and, in the peculiar circumstances of the time it comes, I may say, with providential mercy. It *lays its hands* upon the young in the very cradle and outset of their being ; and, while *the tablet of their hearts* is yet susceptible of every impression, it *writes* upon them the name of God, and *the words of eternal life*. Even in the midst of poverty and obscurity, it raises their young hearts, while it tells them that they are the *members of Christ*, and the children of the living God ; and, ere they enter upon the dark and dangerous path of life, it unveils to them that final kingdom, of which, in the might and mediation of their Master, they are promised an eternal inheritance. It is in this high and holy discipline, that, laying the foundation of religion *deep and strong* in the very elements of the infant soul,—in awakening, with its earliest dawn, the manifold hopes and affections, which the gospel is fitted to excite,—in beginning that blessed communion with the God and Saviour of the human race, which even infancy can feel, and without which maturity is miserable,—it is in these various and important methods, that the system of education I am now attempting to illustrate is so singularly and so essentially valuable ; and, were it universally adopted, the dangers to which I have alluded, would timely and effectually be prevented. From the great school

of the gospel,—from the school in which they were brought up *in the nurture and admonition of their Lord*,—the young might then, with safety, advance into the schools of human art and human science. In possession of the mighty key, which *opens up to them not only life but immortality*, they would see all the knowledge of time as introductory only of the knowledge of eternity. In acquiring a knowledge of the laws of nature, they would acquire, at the same time, a deeper conviction of the wisdom and goodness of *the God of their salvation*: and every acquisition of scientific knowledge, would lead them only more fully to understand, and more deeply to feel, that the system of the gospel was, in truth, *the one thing needful* to satisfy all the wants and desires of their nature; and to comprehend, with the great apostle, that it, and it alone, was *the power of God, and the wisdom of God, unto the salvation of the immortal soul*. In such a discipline of education, all *the moral and religious powers* of our nature would be cultivated along with the *intellectual*: the expanding mind would expand in *faith*, as well as in *knowledge*: and, under the guidance of the Spirit that is from above, the people of our land would rise, we may trust, into that highest state of Christian character, that of being *a peculiar people, zealous* at once in the maintenance of *religious faith*, and in the practice of all *good works*. * * * * *

Nor is it possible, my brethren, while we are sitting, as it were, beside that *well of living water*, which is now opening to the infant flock of Christ, to resist some very enthusiastic anticipations of the course, which its waters are to pursue, and of the fertilities, which they are finally to produce. One of the noblest features of the age in which we live, is that of its zeal and activity in disseminating the light of the gospel throughout all nations: and there is not one, I am persuaded, who hears me, who is not, in some way or other, associated in this high and holy ambition. How beautifully, then, and how providentially, does this institution for infant education, rise up before you to assist you in this great pursuit, and to co-operate with you to this generous end! There is no country, to which it may not be ex-

tended. There is no tongue, in which it may not be taught. There are no *little children* so far from the kingdom of God, to whom it doth not open its arms, and whom it is not willing to receive into the household of salvation. It is now, indeed, only in the hour of its birth,—in the act of springing from the *rock of ages*. But it carries in its waters the spirit of healing and of power; and if our hands receive it with the faith, and distribute it with the charity, of the gospel, who shall say where its course is to stop? Where is the *wilderness* of nature, which may not be gladdened by the sound of its *living waters*? Where the *desert place*, which they may not make to *bud and to blossom as the rose*? *The seed* which you are now planting, *small* and unnoticed as it may seem, is yet the seed of the *word of God*; and, under the dew of his blessing, it is fitted to *grow up* in that *tree of life*, whose branches are to *overshadow* the world, and whose leaves are to *be for the healing of the nations*! *Alison.*

IS THE GOSPEL HISTORY TRUE?

It is allowed on all hands, that the books, which we call the four Gospels, were written by the persons, whose names they bear, and nearly about the date, which is usually assigned to them. It is clear, too, that we possess them at present in the same state, in which they existed nearly eighteen hundred years ago; for ever since their publication, they have been in the hands both of friends and foes, who could not unite in any *mutual* plan for altering them; and who never would have allowed any change to be made by each other unchallenged. Each of these Gospels is a history of the same events,—the events of the life of Jesus Christ.—When we read a simple narrative of matters of fact, the natural tendency of our mind is to believe it; provided we see that the writer had access to sufficient information on his subject, and are satisfied that his intentions were honest. Our belief, of course, would be much strengthened, if no less than four writers, properly qualified for the task, should be induced to write

four different histories of the same transactions, without differing essentially in their statements. Now, the four Gospels (laying for the present out of view their claim to inspiration,) are just exactly four such histories. They profess to be mere narratives of fact, without either inference or comment. Surely the writers had sufficient access to information: for two of the four were the constant and intimate companions of Him whose life they write; and the other two were associates of such persons, writing under their superintendence and direction. We never think of doubting, that the statements, which two of the scholars of a Greek philosopher have published concerning him, are trustworthy and accurate; and why should we distrust the account given by four disciples of Christ, of what was spoken, and done, and suffered, by their Master? Does it not greatly strengthen the testimony of each, that, upon the leading features of the transactions which they record, they fully and entirely agree? They differ, indeed, from each other in some minute particulars: but does not this always happen, when honest men are stating each his own views and impressions of a transaction, which has come within his own knowledge? Would not a jurymen place far more confidence in four witnesses, who, agreeing in all great points, should state some little circumstances differently, than if they all told their tale, from beginning to end, with such exact conformity of phrase and statement, as might have been the effect of previous concert among themselves?—If the writers of the Gospel histories had access to abundant information on the subject of which they treat, it only remains for us to inquire, whether we have any grounds to impute dishonest intentions to them? Can they have given to the world as true, what they themselves well knew to be false? We can scarcely figure to ourselves a supposition more destitute of all show of probability, than that it should have entered into the mind of a few peasants and fishermen, in the despised country of Judea, to league together, for the purpose of publishing a mere fable, as the life of a teacher of wisdom and righteousness. How could they have ever felt any inclination to attempt what was so utterly be-

yond their province? How could they ever have supposed themselves qualified in any respect to succeed in so wild an attempt? If so strange a conception had entered into their minds at all, it must have been suggested to them, one would think, either by a strong sense of personal interest, or by an enthusiastic attachment to the glory of their country, or at least by some eager adherence to previous opinions of their own. But the history of Jesus Christ contains in itself abundant proof, that their personal interest could never be promoted by acknowledging his authority, and walking in his steps. He is represented as living a life of poverty and suffering, and as holding forth to his disciples no better prospects in this world. The enthusiasm, which a Jew felt for his country's glory, would have tended to separate him from a teacher, who commanded to "render unto Cæsar the things which are Cæsar's;" for there was nothing so intolerable to the national pride of Judea, as the yoke which the Roman emperors had laid upon it.—The *previous* opinions and wishes of the apostles, too, were all in direct opposition to the facts, which are recorded by them in the Gospel history. They did indeed expect, that, about the time when Jesus Christ was born, there should appear a promised messenger of God, the Messiah. But they expected that this Messiah should prove a conquering prince, surrounded with affluence and splendour: every step of whose brilliant career should be the very reverse of what they themselves have recorded as the tenor of their Master's life. They expected also, that Messiah should confirm the authority of the ceremonial law. Nor can any thing be imagined more adverse to the whole tone of their previous feelings, than the doctrine, that all who worship God may worship him, not in Jerusalem only, but wherever the tribute of spirit and of truth can be offered.—Granting, however, that all this had been otherwise; granting it to be probable that a few fishermen of Galilee should combine to palm upon the world a literary forgery; and that they really had some object of personal or national interest to accomplish by it; granting that the previous bent of their own minds had been in perfect concordance with the

statements of the history which they published ;—what possible chance of success had they in such an attempt ? They could not hope to escape the strictest examination.—Indeed, their statement was of a kind, which seemed to court inquiry. The transaction, which they professed to record, was not one of distant date. Not only had they themselves borne a part in it ; but it might have been witnessed, and might well be remembered, by every reader of their narrative at its first publication. It was not a thing which had “been done in a corner.” It is described as having occurred chiefly in the capital city of their land, in its most public places of resort, and among its most public solemnities. The wise, and the learned, and the powerful, of the nation are represented as having keenly watched over it, and as having done every thing in their power to discountenance and to crush it. But how were their exertions directed ? Amidst all their zeal and all their power, there is no proof of their having ever denied the mere *facts* of the Gospel history. They attempt to put their own gloss upon them, but never think of calling their existence in question. They do not deny that Jesus Christ cured diseases miraculously ; though they declare it as their own opinion, that he performed these wonderful works through the power of Satan. They do not deny that his body disappeared from the tomb, which once contained it, and which they themselves had secured with every precaution ; though they declare it as their opinion, that the body was stolen by his disciples, while a guard of Roman soldiers slept upon their post. For all these statements the writers of the Gospels were alive to be responsible, at the time when the history was published. Yet, though force was employed with some of them, to change their opinions, none of them, so far as we know, were ever asked or expected to change their narrative. To what would all this amount in our own day ? If any four men, in our own immediate neighbourhood, should publish the history of a transaction, stated to have taken place, in the streets and public assemblies of the city of Edinburgh, four or five years ago ; if these transactions were represented to be of a kind, which had most powerfully

attracted the notice of all ranks of men; if all the learned and all the powerful of our land, instead of considering these histories as beneath their regard, were to show the strongest inclination to overthrow their credit and to counteract their efficacy;—unless such histories were true, how would it be possible for them to gain belief for a moment? Inquiry would be the most easy thing imaginable. Detection of falsehood would be immediate. The whole weight of public scorn and indignation would crush the imposture into utter forgetfulness. Or, if it were permitted to go down to posterity at all, there would go down along with it the most clear, and decisive, and triumphant, exposure of its fallacy. If nothing of this kind has happened, when the circumstances were exactly similar, in regard to the four Gospels, what inference can reason or candour draw, but that the facts which the Gospels record are true?

Brunton.

ON THE PROPHECIES REGARDING CHRIST.

ONE of the most striking circumstances, connected with the Christian dispensation, is the long and singular train of prophecy, by which it was ushered into the world. These remarkable predictions, delivered in various ages, were committed to the custody of a chosen people, whose whole history and present condition have themselves been justly accounted miraculous. The events foretold, though in some instances of a most extraordinary nature, and, before their actual occurrence, apparently irreconcilable with each other, were all brought to pass, in the person of Jesus Christ, hundreds of years after they were predicted,—at a time when, in consequence of these prophecies, there was a strong expectation of the promised Deliverer,—and by means of agents not at all interested in their completion. The predictions relate to all the important circumstances in Messiah's history,—his pre-existent state,—the family of which he was to be born,—the time, place, and other circumstances of his nativity,—his external rank and condition,—his divine inspiration,

—his moral character,—his offices,—his miraculous works,—his last sufferings, death, and burial,—his resurrection and ascension,—and other remarkable events which were to follow his appearance.—I. With respect to Messiah's PRE-EXISTENT STATE, the Prophets tell us in the plainest manner, that the hour of his earthly birth was not to be the commencement of his being. Thus Micah declares, that out of the town of Bethlehem Ephratah, *shall he come forth, that is to be ruler in Israel: whose goings forth have been of old FROM EVERLASTING*. They speak moreover of Messiah's equality with God. Thus Zechariah in a memorable passage, cited by our blessed Lord, on the eve of his death, as applicable to himself, breaks out in the following remarkable words, *Awake, O Sword, against my Shepherd, and against the man that is MY FELLOW, saith the Lord of Hosts*. They tell us still further that he is God himself. Thus Isaiah announces, *Behold a virgin shall conceive, and bear a son, and shall call his name IMMANUEL; which being interpreted, as the Evangelist Matthew explains, is God with us*. And again the same Prophet declares, *Unto us a child is born, unto us a Son is given; and his name shall be called Wonderful, Counsellor, THE MIGHTY GOD, The everlasting Father, the Prince of Peace*.—When Jesus of Nazareth, accordingly, appeared upon earth, he spake of his own pre-existence. He told the Jews, “*Before Abraham was, I am* ;” and, in addressing his Father, he referred to *that glory, which he had with him, before the world was*. He declared, that *all men should honour the Son, even as they honour the Father* ; and it was imputed to him by the Jews as blasphemy, that he made himself equal with God. In still more express terms, he asserted his own divinity, saying, “*I and my Father are one* :” “*he that hath seen me hath seen the Father*.” But it may naturally be asked, in what manner he established his claim to this high character, and by what signs he manifested his divinity. To this it is answered, that he exhibited every one evidence and seal of his divinity, which imagination can suggest, or the nature of the claim can possibly admit,—by performing preterhuman works,—by penetrating the secrets of the heart,—by teaching sublimer truths and purer doctrines, than had ever fallen

from the lips of uninspired man,—by being the single individual, that ever appeared in the form of man, of whom it could be said, that *he was in all points tempted like as we are, yet without sin*,—by rising victorious from the grave,—by visibly ascending to that heaven whence he declared he came,—by the miraculous fulfilment of that promise, which he gave to his apostles, of extraordinary assistance from above, and of his other predictions, particularly those regarding the destruction of Jerusalem, the persecution of his followers, and the triumphant march of his religion. What stronger proof, upon this subject, could have been demanded from our Lord, than what all these circumstances, taken together, afford?—or would the Most High have vouchsafed so strong an attestation in favour of one, who had presumptuously usurped his own honour?—II. With regard to the FAMILY, of which Messiah was to be born, it is pleasing to observe the manner, in which the light of prophecy, dim and feeble at first, breaks forth more and more unto the perfect day. The first promise was that made in reference to the mother of mankind, in which it was declared in general terms, that it was *HEBRED, which should bruise the serpent's head*.—When ABRAHAM, the father of the chosen people, was providentially called to leave his own country, and his kindred, for a land that God would show him, he received the express promise, that in him, or, as was afterwards more distinctly explained to him, in *his seed, all families of the earth were to be blessed*.—This patriarch had more than one son, and, in answer to his prayer, *O that Ishmael might live before thee*, as well as on other occasions, he was expressly told, that the covenant was to be made, not with Ishmael, his first begotten, but with the son of Sarah, who was not yet born. *Sarah, thy wife, shall bear thee a son indeed; and thou shalt call his name Isaac: and I will establish my covenant with him for an everlasting covenant, and with his seed after him. And as for Ishmael, I have heard thee: behold I have blessed him, and I will make him a great nation. But my covenant will I make with ISAAC, which Sarah shall bear unto thee*.—Isaac, in like manner, had two sons, Esau and Jacob; and here, again, the promise was limited to JACOB, to the exclusion of

his elder brother. The Lord said unto Jacob, *I am the Lord God of Abraham thy father, and the God of Isaac : in thee, and in thy seed, shall all the families of the earth be blessed.* Jacob had twelve sons, and, in the prophetic blessing, which he pronounces over them on his deathbed, he distinctly marks out the chosen tribe. After warning Reuben, that though he was *his first born, his might, and the beginning of his strength, the excellency of dignity, and the excellency of power, yet, unstable as water, he should not excel,*—and declaring of Simeon and Levi, that *he would divide them in Jacob and scatter them in Israel,*—he, in rapturous and glowing language, hails the future glory of the more highly favoured JUDAH. *Judah, thou art he, whom thy brethren shall praise ; thy hand shall be in the neck of thine enemies ; thy father's children shall bow down before thee ; the sceptre shall not depart from Judah, nor a lawgiver from between his feet until Shiloh come : and unto him shall the gathering of the people be.*—It was lastly revealed, that the promised Deliverer should be of the stock of JESSE, and the house of DAVID. *There shall come forth, saith Isaiah, a rod out of the stem of Jesse, and a branch shall grow out of his roots, and the Spirit of the Lord shall rest upon him, &c.* So, also, Jeremiah declares, *Behold the days come, saith the Lord, that I will raise unto David a righteous branch, &c.*—All this was fulfilled in the person of Jesus Christ, who was the seed of the woman ; the seed of Abraham, of Isaac, and of Jacob ; of the tribe of Judah ; of the stock of Jesse ; and of the house and lineage of David.

—III. With regard to the TIME of Messiah's birth, it was announced by the patriarch Jacob, in a passage already quoted, that *the sceptre should not depart from Judah, nor a lawgiver from between his feet, UNTIL SHILOH SHOULD COME ;* which implied, that this tribe should continue a distinct people, possessing its own laws, and its own sovereign, until the coming of the Deliverer. Every other tribe finally lost this distinction, long before the appearance of Christ. The ten revolting tribes never returned from Assyria. Benjamin became an appendage of the tribe of Judah. But Judah, at this memorable epoch, was still permitted by the Romans, the rulers of the world, to retain, not

her own laws only, but her own king. No sooner, however, was the prophecy fulfilled, than the promised distinction ceased. There was a king of Judea when Shiloh came ; there was no such king when Shiloh departed. At the time of Messiah's birth, the declining sceptre was wielded by Herod the Great. On the death of Herod, which took place during the infancy of Jesus, his son Archelaus succeeded to the government ; but, on account of the opposition made to him, both by his own kindred and by the people whom he was to govern, the Romans allowed him only to assume the inferior title of Ethnarch, making his obtaining that of king to depend upon the satisfaction which should be given by his government. The latter title he was never allowed to assume, being, on the complaint of his subjects, soon entirely deprived of his power, and banished to Gaul. Now, at length, the sceptre took its departure. No other temporal king was permitted to ascend the throne of Judah, which became a part of a Roman province, and was thenceforth governed by procurators sent from Rome. At our Saviour's trial, the chief priests admitted that they had now *no king but Cæsar*. The Jews still, indeed, to a certain extent, retained their own laws and customs, as appears from Pilate, the Roman governor, telling the chief priests to take Christ and judge him, *according to their law*. From their answer it would seem, on the other hand, that their former rights, in this respect, had begun to be curtailed, and that they had lost, *in their own persons*, the power of life and death, though they still asserted their right to call upon the foreign judge to administer their law. *We have a law*, said they, *and by this law he ought to die*. The day, however, was fast approaching when their national existence was entirely to cease. In less than forty years, the Jews, as every one knows, not only ceased to be a nation, but were scattered abroad over the face of the earth. Had Messiah's appearance, accordingly, taken place at a period not much later than it actually did, the prophetic declaration of the Patriarch could not have been accomplished.—With regard to the time of this appearance, also, a remarkable Revelation was made to Daniel. SEVENTY WEEKS

are determined upon thy people, and upon thy holy city, to finish the transgression, and to make an end of sins, and to make reconciliation for iniquity, and to bring in everlasting righteousness, and to seal up the vision and prophecy, and to anoint the Most Holy. Know therefore and understand, that, from the going forth of the commandment to restore and to build Jerusalem, unto the Messiah the Prince, shall be seven weeks and threescore and two weeks. And after threescore and two weeks shall Messiah be cut off, but not for himself. Now, it has been shown by Sir Isaac Newton, as well as many other learned men, that, by computing each day for a year, the seventy weeks were precisely accomplished at the time when Christ was cut off. On this subject, it seems proper to remark, that the division of years, as well as of days, into weeks or portions of seven, was quite familiar to the Jews, with whom every seventh year was a Sabbath for the land, as every seventh day was for the people. It is also remarkable, that this comparison of years to days seems not to have been uncommon in their prophetic language. It was thus the Lord, by Moses, foretold to the children of Israel their forty years' detention in the wilderness: *After the number of the days, in which ye searched the land, even forty days, EACH DAY FOR A YEAR, shall ye bear your iniquities, even forty years.* Thus also we read in the fourth chapter of Ezekiel, that the Lord enjoined this prophet to perform a certain observance for forty days, as typical of a period of forty years; saying, *I have appointed thee EACH DAY FOR A YEAR.*—There yet remains one striking circumstance, by which the Prophets still further limited the period of Messiah's advent, namely, their declaration that it should take place during the subsistence of the second temple. *I will shake all nations, saith the Lord by Haggai, and the Desire of all nations shall come, and I will fill THIS HOUSE with glory, saith the Lord of Hosts.* So also Malachi announces, *The Lord, whom ye seek, shall suddenly come to his temple, even the Messenger of the covenant, whom ye delight in; behold he shall come, saith the Lord of Hosts.* At a time, accordingly, when men were eagerly looking out for the *Desire of all nations*, Christ came to that temple, of which, within a

few years, not one stone was to be left upon another ; and there received the welcome greetings of those *who waited for the consolation of Israel.* *Original.*

ON PROPHECY (CONTINUED).

IV. THE precise PLACE of Messiah's birth is distinctly pointed out in ancient prophecy. *Thou BETHLEHEM EPHRATAH, saith Micah, though thou be little among the thousands of Judah, yet out of thee shall he come forth unto me, that is to be ruler in Israel.* Had an uninspired penman ventured to predict, from probability alone, the birthplace of the promised king of Judah, he would hardly have fixed it at Bethlehem ; which, though truly the city of David, was only the residence of his early years, under the lowly roof of his father Jesse. Such a writer would, on the contrary, have rather led his countrymen to look for this event at Sion, the royal residence. Relying, however, on the Prophecy of Micah, the Jews appear to have had a universal expectation that their King was to be born at Bethlehem. So the Priests and Scribes expressly told Herod, when he, with jealous fear, made inquiry upon this subject. So also, on one occasion, some of the Jews, under the erroneous notion that Christ was a native of Nazareth, where he had been brought up, rejected him, saying, *Shall Christ come out of Galilee ? Hath not the Scripture said, that Christ cometh out of the seed of David, and out of the town of Bethlehem, where David was ?* It adds, moreover, much weight to the evidence of Scripture prophecy, that the ordinary residence of Christ's mother was at Nazareth ; and that the Providence of God had so ordered, for the fulfilment of the prediction, that she should, notwithstanding, be at Bethlehem at the time of her son's birth. This, too, was brought about, not by means of agents, who had in view the accomplishment of prophecy, but in obedience to the decree of a Heathen Emperor.—V. Besides the family of which Messiah was to be born, and the time and place of his birth, there were OTHER REMARKABLE CIRCUMSTANCES connected with his nativity, which were the subjects of Prophecy. Thus Isaiah, in a passage already referred to, declares, *Behold A VIRGIN*

shall conceive and bear a son, and shall call his name Immanuel; and this, accordingly, was fulfilled in the person of Jesus, who was born of Mary, a virgin of Nazareth.—Ancient Prophecy also, in more than one passage, and by the mouth of more than one prophet, foretold, that, ere the Lord himself should come forth for the deliverance of his people, a messenger should go before him to prepare his way. Isaiah speaks of *THE VOICE of him that crieth in the wilderness, Prepare ye the way of the Lord; make straight in the desert a highway for our God*. So also Malachi, the last of the Prophets, thus speaks in the name of the Lord, *Behold I will send MY MESSENGER, and he shall prepare the way before me, and the Lord, whom ye seek, shall suddenly come to his temple*. Accordingly, before Jesus Christ commenced his ministry, the voice of John the Baptist was heard in the wilderness of Judea, preaching the preparatory doctrine of repentance for the remission of sins,—declaring that *there came one after him who was mightier than he, the latchet of whose shoes he was not worthy to stoop down and unloose*,—and expressly pointing out Jesus as the *Lamb of God, which taketh away the sin of the world*.—VI. The descriptions given by the Prophets of Messiah's external RANK and CONDITION are very remarkable. In some of them he is described as a Prince endowed with all glory and power; in others, as placed in the lowest and most abject condition; and there are still others, in which both conditions are at once ascribed to him. In the language of Jeremiah, *Behold the days come, saith the Lord, that I will raise unto David a righteous branch, and a KING shall reign and prosper, and shall execute judgment and justice on the earth*. I saw, saith Daniel, *in the night visions, and behold, one like the son of Man came with the clouds of heaven, and came to the Ancient of days, and they brought him near before him: and there was given him dominion, and glory, and a kingdom, that all people, nations, and languages, should serve him: his dominion is an everlasting dominion, which shall not pass away, and his kingdom that which shall not be destroyed*. The government, saith Isaiah, *shall be upon his shoulder; of the increase of his government and peace there shall be no end*. On the

other hand, the same prophet declares, *He is DESPISED and REJECTED of men, a man of sorrows and acquainted with grief; and we hid, as it were, our faces from him; he was despised, and we esteemed him not.* But this description of Messiah's humiliation, it ought to be particularly remarked, is both preceded and closed by representations of his exaltation and triumph. *Behold, saith the prophet in the preceding words, my servant shall deal prudently, he shall be exalted and extolled and be very high. As many were astonished at thee; (his visage was more marred than any man, and his form more than the sons of men;) so shall he sprinkle many nations, the kings shall shut their mouths at him: for that, which had not been told them, shall they see; and that, which they had not heard, shall they consider.* So also in the concluding words the prophet, in the name of the Lord, triumphantly declares, *that he will divide him a portion with the great, and he shall divide the spoil with the strong.* In the following remarkable passage, also, from the same prophet, the lowest humiliation is blended with the loftiest exaltation in the description of the future Deliverer. *Thus saith the Lord, the Redeemer of Israel and his Holy One, to HIM WHOM MAN DESPISETH, to him whom the nation abhorreth, to a servant of rulers, kings shall see and arise, PRINCES ALSO SHALL WORSHIP, because of the Lord that is faithful, and the Holy One of Israel, and he shall choose thee.* Zechariah likewise exclaims, *Rejoice greatly, O Daughter of Sion, shout, O Daughter of Jerusalem: behold THY KING cometh unto thee; he is just and having salvation, LOWLY, and riding upon an ass, and upon a colt, the foal of an ass.* The literal fulfilment of this prophecy, on Christ's entrance into Jerusalem, every one knows. The prediction itself plainly implies, that Messiah, though a king, was to have none of the pride and pomp of earthly monarchs.—All these apparently conflicting predictions have been strikingly fulfilled in the person of Jesus Christ, the Son of Mary. Who could be more *despised and rejected of men*, than this reputed son of a carpenter of Nazareth; born in a stable, and cradled in a manger; the companion of lowly fishermen, and even the friend of publicans and sinners, the very out-

casts of the people ; the continual subject of scorn and false accusation ; who had not where to lay his head ; and who died at length the ignominious death of a malefactor on the cross ? Yet this despised Nazarene have we seen *exalted to be a Prince and a Saviour, receiving the heathen for his inheritance, and the uttermost parts of the earth for his possession : him, whom man despised, whom his own nation abhorred, have we ourselves seen kings and princes arise and worship ; and to him hath been given a name, which is above every name, at which every knee doth already begin to bow, of things in heaven, and things in earth, and things under the earth.*—VII. It was foretold that Messiah should be in a particular manner endowed with THE HOLY SPIRIT. Thus Isaiah, speaking of the rod of Jesse, says, *The Spirit of the Lord shall rest upon him, the spirit of wisdom and understanding, the spirit of counsel and might, the spirit of knowledge, and the fear of the Lord, &c.* Again, he saith, *Behold my servant, whom I uphold ; mine elect, in whom my soul delighteth : I have put my Spirit upon him.* And again, *The Spirit of the Lord God is upon me, because the Lord hath anointed me to preach good tidings, &c.* It was, accordingly, the boast of the Apostles, that *God anointed Jesus of Nazareth with the Holy Ghost, and with power ;* and, in proof of this assertion, they could refer not only to the doctrines which he taught, and to the works which he wrought, but also to the visible descent of the Spirit upon him, at the time of his baptism.—VIII. With regard to the MORAL CHARACTER of Messiah, he is described by the prophets as perfectly holy, guileless, humble, patient, gentle, merciful. Isaiah, speaking in the name of the Lord, calls him, *My righteous servant.* By Jeremiah he is termed THE LORD OUR RIGHTEOUSNESS ; and by Daniel, *the Most Holy.* Isaiah says, *he had done no violence, neither was any deceit in his mouth.* Zechariah, *He is just, and having salvation, lowly, &c.*—Speaking of his patience, Isaiah saith, *He was oppressed and he was afflicted, yet he opened not his mouth : he is brought as a lamb to the slaughter, and, as a sheep before her shearers is dumb, so he openeth not his mouth.*—In reference to his gentleness, the same prophet declares, *He shall not cry nor lift up, nor cause his voice to be*

heard in the streets: a bruised reed shall he not break, and the smoking flax shall he not quench. Again, He shall feed his flock like a shepherd; he shall gather the lambs with his arm, and carry them in his bosom; and shall gently lead those that are with young.—With regard to his mercy, particularly as displayed in compassion to the poor and needy, it would be endless to multiply passages. Neither is it necessary to point out to any one at all acquainted with the life of our blessed Lord, as portrayed by the Evangelists, how supereminently he, in all respects, sustained the character, which had previously been given of him by the prophets.—IX. The prophets describe the various OFFICES, which Messiah was to execute, for the salvation of his people, viz. those of instruction, expiation, and government. We cannot here recite all the passages, in which the shedding abroad of LIGHT and KNOWLEDGE is ascribed to him. We shall mention only one circumstance connected with this subject, which is the peculiar boast of Christianity,—that its divine Author, unlike former teachers, was to address his doctrine, not to the more highly favoured classes only of the community, but also to the poor and the lowly. In the language of Isaiah, *The Spirit of the Lord God is upon me, because the Lord hath anointed me to preach good tidings UNTO THE MEERK.* So, also, Jeremiah, speaking in the name of the Lord of the new covenant, which he was to make with the house of Israel and of Judah, declares, *They shall teach no more every man his neighbour, and every man his brother, saying, know the Lord; for they shall all know me, FROM THE LEAST OF THEM unto the greatest of them, saith the Lord.* The fulfilment of these predictions every one knows. The first of them our Saviour himself recited, in the synagogue of the city where he was brought up, adding, *This day is this Scripture fulfilled in your ears;* and in answer to John's message, *Art thou he that should come?* he replied, *The poor have the Gospel preached to them.*—The Redeemer's EXPIATORY OFFICE is no less clearly pointed out by the prophets. *The Lord hath sworn, saith the Psalmist, and will not repent, Thou art a PRIEST for ever after the order of Melchizedek.* Isaiah declares, *Thou shalt make his soul AN OFFERING FOR SIN.* He hath

borne our griefs, and carried our sorrows ; he was wounded for our transgressions ; he was bruised for our iniquities ; the chastisement of our peace was upon him ; and with his stripes we are healed. The Lord hath laid on him the iniquity of us all. He was cut off out of the land of the living : for the transgression of my people was he smitten. He hath poured out his soul unto death, and he bare the sins of many, and made intercession for the transgressors. So, also, it was revealed to Daniel, that Messiah should be cut off, but not for himself, and that he should finish the transgression, and make an end of sin, and bring in everlasting righteousness. How all this was fulfilled in the person of Jesus Christ, who, in the language of his Apostles, was made sin for us, yet knew no sin, it is unnecessary to state.—In treating of the external condition of Messiah, we have already had occasion to notice some of the prophecies, which relate to his REGAL OFFICE, and the mode of their completion. Suffice it, at present, to say, that, in every one circumstance, which can be supposed to constitute a great and glorious prince, the fulfilment of prophecy is complete ; by the wise and salutary laws which Christ has given to his church,—by the protection which, during so many ages, he has afforded it, against all the assaults of its enemies,—and by the triumphant manner, in which, going forth conquering and to conquer, he continues to extend his victorious sceptre over the kingdoms of the earth.

Original.

ON PROPHECY (CONTINUED.)

X. THE prophets speak of the MIRACULOUS WORKS, which Messiah was to perform. *Then, saith Isaiah, the eyes of the blind shall be opened, and the ears of the deaf shall be unstopped ; then shall the lame man leap as an hart, and the tongue of the dumb sing. All this, and much more, it is needless to remind you, were literally fulfilled in the person of Christ, who, in testimony of his divine mission, could say, Go and show John again those things, which ye do hear and see ; the blind receive their sight, and the lame walk ; the lepers are cleansed, and the deaf hear ; the dead are raised*

up!—XI. The prophetic accounts of Messiah's **LAST SUFFERINGS AND DEATH** are delivered with a minute accuracy, which (if we were not perfectly certain that they were given long before the event) would lead us to believe, that they were historical descriptions rather than predictions. The 53d chapter of Isaiah, and the 22d Psalm, are particularly striking. With regard to the Book of Psalms, we may take this opportunity of observing, that, though it is not arranged in our Bibles among the prophetic Scriptures, it possesses all the characteristics of this species of writing, was viewed in this light by the ancient Jews, and is accordingly referred to, very frequently, both by our Lord and his Apostles, as belonging to this class. The writings of David, in particular, the progenitor and representative of Christ, while applicable to himself only in a remote and figurative sense, were, in many instances, literally fulfilled in the person of Jesus, and in his person only.—Following the order of events, we may notice, upon this branch of the subject, in the first place, the singular prophecy of Zechariah, in which he says, *They weighed; for my price, THIRTY PIECES OF SILVER, and the Lord said unto me, CAST IT UNTO THE POTTER; a goodly price that I was prized at of them: and I took the thirty pieces of silver, and cast them to the potter, IN THE HOUSE OF THE LORD.* Now, the Evangelists tell us, that the price, for which Judas covenanted to deliver up his master to the chief priests, was *thirty pieces of silver*; that the traitor, *when he saw that Jesus was condemned, repented himself, and cast down the pieces of silver in the temple*; and that the chief priests took counsel, and *bought with them the potter's field, to bury strangers in.*—The same prophet, speaking of the man that is God's fellow, says, *Smite the shepherd, and the sheep shall be scattered.* The Evangelists inform us, that, on the night on which Jesus was betrayed, he, referring expressly to this very passage, told his Apostles, *All ye shall be offended because of me this night.* The predictions, both of Zechariah and of Jesus, were that night fulfilled. *They all forsook him and fled*; and one of the most valiant actually thrice denied him.—*He was taken*, says Isaiah, *from prison and from judgment.* The Evangelists tell us, that Christ was arrested by

order of the chief priests, who kept him a prisoner all night, and delivered him over, next morning, to Pilate, the Roman governor, who sent him to Herod, and at length, upon his return, pronounced judgment against him.—*I gave my back,* says Isaiah, *to the smiters.* And again, *he was wounded for our transgressions ; he was bruised for our iniquities ; and with his stripes we are healed.* The Evangelists tell us, *Pilate took Jesus and scourged him.*—Isaiah says, *He is despised and rejected of men,* and again more particularly, *He hid not his face from shame and spitting.* So, also, the Psalmist complains, *I am a worm and no man, a reproach of men and despised of the people ; all they that see me laugh me to scorn ; they shoot out the lip, they shake the head, saying, He trusted on the Lord that he would deliver him ; let him deliver him seeing he delighted in him.* Compare this with the accounts given by the Evangelists of the insults offered to our Lord. While he stood before the High Priest, *they did spit in his face and buffeted him, and others smote him with the palms of their hands.* Herod, also, *with his men of war set him at nought, and mocked him, and arrayed him in a gorgeous robe.* In leading him away from Pilate's judgment-seat, *the soldiers platted a crown of thorns and put it upon his head, and a reed in his right hand ; and they spit upon him, and took the reed and smote him on the head, and mocked him.* On the cross, too, *they that passed by reviled him, wagging their heads, and saying, If thou be the Son of God, come down from the cross.* Likewise also the Chief Priests, *mocking him with the Scribes and Elders, said, He trusted in God ; let him deliver him now if he will have him.* One of the thieves also *cast the same in his teeth.*—The Psalmist says, *They pierced my hands and my feet ;* and Zechariah, *They shall look upon me, whom they have pierced, and they shall mourn for him as one mourneth for his only son, &c.* The Evangelists tell us of Jesus, that *they crucified him, and that one of the soldiers with a spear pierced his side.*—Isaiah says, *He was numbered with the transgressors.* The Evangelists tell us, that he died the death of a malefactor, and that *they crucified two thieves with him.*—The cry of agony which Jesus uttered upon the cross, was that of the prophetic Psalmist, *My God, my God, why hast thou*

forsaken me?—They part, saith David, my garments among them, and cast lots upon my vesture. The Evangelists tell us, that the soldiers, when they had crucified Jesus, took his garments, and made four parts, to every soldier a part; and also his coat: now the coat was without seam woven from the top throughout, they said therefore among themselves, *Let us not rend it, but cast lots for it, whose it shall be.*—They gave me also, saith the Psalmist again, *GALL* for my meat, and, in my thirst, they gave me *VINEGAR* to drink. Now the Evangelists inform us, that, at one period of our Redeemer's sufferings on the cross, they gave him vinegar to drink mingled with gall, and, when he had tasted thereof, he would not drink; and that, in the very close of this mournful tragedy, Jesus saith, *I thirst; and they filled a sponge with vinegar, and put it upon hyssop, and put it to his mouth: when Jesus, therefore, had tasted the vinegar, he said, IT IS FINISHED; and he bowed his head, and gave up the ghost.*—XII. The very BURIAL of Jesus is the subject of accomplished prophecy. *He made his grave, saith Isaiah, with the wicked, and WITH THE RICH in his death.* After the sad picture, which the prophet had drawn, in the immediately preceding words, of Messiah's low condition, in point of external circumstances and worldly reputation, surely nothing could be more unlikely, than that he should receive a burial with the rich. Yet, however obscure and despised had been his life, and apparently ignominious his death, all the Evangelists concur in expressly testifying, that there came to Pilate, a RICH MAN of Arimathea named Joseph, and begged the body of Jesus, and, when Joseph had taken the body, he wrapped it in a clean linen cloth and laid it in his own new tomb.—XIII. The RESURRECTION of the Holy One from the grave, ere his body should see corruption, and his subsequent ASCENSION to the right hand of the Father, are thus spoken of by David in the sixteenth Psalm: *My flesh also shall rest in hope: for thou wilt not leave my soul in hell, neither wilt thou suffer thine Holy One TO SEE CORRUPTION; thou wilt show me the path of life; in thy presence is fulness of joy: AT THY RIGHT HAND there are pleasures for evermore.* All this, as every Christian, on sure

evidence, believes, was literally and fully accomplished in the person of the Holy Jesus ; and that it was thus fully accomplished in his person only, has been conclusively argued by two of his Apostles, Peter and Paul, in their discourses on different occasions. So, also, the whole of the 110th Psalm, *The Lord said unto my Lord, Sit thou at my right hand, &c.*, refers to Messiah's exaltation, as our blessed Lord himself and his Apostles have clearly shown ; and received its accomplishment on the ascension of Christ.—XIV. The prophets foretold several remarkable events, which were to FOLLOW Messiah's appearance, such as, an extraordinary and general effusion of the Holy Spirit, the bringing in of the Gentiles, and the destruction of Jerusalem with its temple. With regard to the effusion of the HOLY SPIRIT, Isaiah led his countrymen to look forward to a remarkable era, when *the Spirit should be poured upon them from on high*. And Joel told them, in the name of the Lord, in language which must to them have been far more startling, *It shall come to pass afterward, that I will pour out my Spirit upon ALL FLESH, &c.* This promise, which our Lord, in his last words to his Apostles, assured them was immediately to be accomplished, began to be confirmed on the memorable day of Pentecost, by the visible and glorious descent of that Spirit, who afterwards so signally displayed his almighty power by the wonderful gifts which he bestowed on the Apostles,—and his impartial goodness, by his being shed abroad, not upon the Jews alone, but upon Cornelius also, and other Gentile converts.—On the subject of the bringing in of the GENTILES, it would be endless to recount all that has been written by the prophets. Suffice it, therefore, to refer to that early declaration of Jacob, that *unto Shiloh shall the gathering of the nations be* ; and to the no less distinct assurance of Malachi, the last of the prophets, *From the rising of the sun, even unto the going down of the same, my name shall be great among the Gentiles ; and in every place incense shall be offered unto my name, and a pure offering ; for my name shall be great among the heathen, saith the Lord of Hosts*. Of the manner in which these predictions have been fulfilled, and are still daily fulfilling, we of this remote island of the sea,

are at once witnesses and living examples.—The last circumstance, which we have mentioned, is the predicted DOWNFAL OF JERUSALEM AND ITS TEMPLE. This event, the last which the mind of a Jew would be inclined either to imagine or receive, is alluded to in many passages of the Jewish Scriptures. But of these the most remarkable is the revelation made to Daniel, in which it is expressly disclosed, *that the people of the Prince, that shall come, shall destroy the city and the sanctuary, &c.* This prophecy was afterwards, on different occasions, more fully repeated and explained by our Blessed Lord himself, who, on *beholding the city wept over it, saying, The days shall come upon thee that thine enemies shall cast a trench about thee and compass thee round, and keep thee in on every side, and shall lay thee even with the ground, and thy children within thee; and they shall not leave in thee one stone upon another.* The total destruction of the city and temple by the Romans, under all the circumstances foretold in Scripture, is the subject no longer of prophecy, but of undoubted history.

In reviewing the whole of this subject, the Christian may triumphantly ask, whether any one of the vast multitude of circumstances above enumerated, *which God spake by the mouth of his holy prophets, that have been since the world began*, has failed to be fully accomplished in the person of Jesus Christ,—whether they have ever been accomplished in the person of any other individual who has yet appeared,—or can be so fully accomplished in the person of any who may yet appear? Even if it should be imagined, that the application of *some* of the above prophecies to Messiah is at all doubtful, far more than enough will remain of undoubted predictions, universally applied by the ancient Jews to their great promised Deliverer, and all accomplished in the person of the Son of Mary. Nor is it any good objection, that the prophecies, though undoubtedly fulfilled, have, in some respects, received their accomplishment in a manner different from that which the Jews previously expected. This, in truth, adds strong additional weight to the prophetic evidence, as utterly exclusive of the notion, that the fulfilment had been designedly brought to pass by the agents of Christianity.

The most satisfactory, doubtless, of all prophecy, is that which is fulfilled by the agency, either of men who had no belief in the prophecy, or of those who neither looked for nor desired its accomplishment, in the manner which they themselves have been instrumental in bringing to pass. The application of this principle to the religion of Christ is sufficiently obvious.—In conclusion, we shall only further observe, that of the strong argument arising from prophecy, the above is necessarily no more than a very faint and most imperfect outline: and that the more you consider the subject, the more will you be led to exclaim with the eye-witnesses of our Saviour's miracles, *This is of a truth that prophet that should come into the world.*

Original.

SCRIPTURE IMAGERY.

No writings whatever abound so much with the most bold and animated figures, as the sacred Books. It is proper to dwell a little upon this article; as, through our early familiarity with these books—a familiarity too often with the sound of the words, rather than with their sense and meaning,—beauties of style escape us in the Scripture, which, in any other book, would draw particular attention. Metaphors, comparisons, allegories, and personifications, are there particularly frequent. In order to do justice to these, it is necessary that we transport ourselves, as much as we can, into the land of Judea; and place before our eyes that scenery, and those objects, with which the Hebrew writers were conversant. Some attention of this kind is requisite, in order to relish the writings of any poet of a foreign country, and a different age: for the imagery of every good poet is copied from nature and real life. If it were not so, it could not be lively; and therefore, in order to enter into the propriety of his images, we must endeavour to place ourselves in his situation. Now, we shall find that the metaphors and comparisons of the Hebrew poets present to us a very beautiful view of the natural objects of their own country, and of the arts and employments of their common life.—Natural objects are, in some measure, common to them with poets of

all ages and countries. Light and darkness, trees and flowers, the forest and the cultivated field, suggest to them many beautiful figures. But, in order to relish their figures of this kind, we must take notice, that several of them arise from the particular circumstances of the land of Judea. During the summer months, little or no rain falls throughout all that region. While the heats continued, the country was intolerably parched; want of water was a great distress; and a plentiful shower falling, or a rivulet breaking forth, altered the whole face of nature, and introduced much higher ideas of refreshment and pleasure, than the like causes can suggest to us. Hence, to represent distress, such frequent allusions among them to "a dry and thirsty land, where no water is;" and hence, to describe a change from distress to prosperity, their metaphors are founded on the falling of showers, and the bursting out of springs in the desert. Thus, in Isaiah, "The wilderness and the solitary place shall be glad, and the desert shall rejoice, and blossom as the rose. For, in the wilderness, shall waters break out, and streams in the desert; and the parched ground shall become a pool, and the thirsty land springs of water; in the habitation of dragons, there shall be grass, with rushes and reeds." Images of this nature are very familiar to Isaiah, and occur in many parts of his book.—Again, as Judea was a hilly country, it was, during the rainy months, exposed to frequent inundations, by the rushing of torrents, which came down suddenly from the mountains, and carried every thing before them; and Jordan, their only great river, annually overflowed its banks. Hence the frequent allusions to "the noise, and the rushings, of many waters;" and hence great calamities so often compared to the overflowing torrent, which, in such a country, must have been images particularly striking: "Deep calleth unto deep at the noise of thy water-spouts; all thy waves and thy billows are gone over me."—The two most remarkable mountains of the country were Lebanon and Carmel: the former noted for its height, and the woods of lofty cedars that covered it; the latter, for its beauty and fertility, the richness of its vines and olives. Hence, with the greatest propriety, Lebanon is employed as an image of whatever is great,

strong, or magnificent ; Carmel, of what is smiling and beautiful. "The glory of Lebanon," says Isaiah, "shall be given to it, and the excellency of Carmel." Lebanon is often put metaphorically for the whole state or people of Israel, for the temple, for the king of Assyria ; Carmel, for the blessings of peace and prosperity. "His countenance is as Lebanon," says Solomon, speaking of the dignity of man's appearance ; but, when he describes female beauty, "Thine head is like Mount Carmel."—It is farther to be remarked, under this head, that, in the images of the awful and terrible kind, with which the Sacred Poets abound, they plainly draw their descriptions from that violence of the elements, and those concussions of nature, with which their climate rendered them acquainted. Earthquakes were not unfrequent ; and the tempests of hail, thunder, and lightning, in Judea and Arabia, accompanied with whirlwinds and darkness, far exceed any thing of that sort, which happens in more temperate regions. Isaiah describes, with great majesty, "the earth reeling to and fro like a drunkard, and removed like a cottage." And, in those circumstances of terror, with which an appearance of the Almighty is described in the eighteenth Psalm, when "his pavilion round about him was darkness ; when hailstones and coals of fire were his voice : and when, at his rebuke, the channels of the waters are said to be seen, and the foundations of the hills discovered ;" though there may be some reference, as Dr Lowth thinks, to the history of God's descent upon Mount Sinai, yet it seems more probable that the figures were taken directly from those commotions of nature, with which the author was acquainted, and which suggested stronger and nobler images than what now occur to us.—Besides the natural objects of their own country, we find the rites of their religion, and the arts and employments of their common life, frequently employed as grounds of imagery among the Hebrews. They were a people chiefly occupied with agriculture and pasturage. These were arts held in high honour among them ; not disdained by their patriarchs, kings, and prophets. Little addicted to commerce, separated from the rest of the world by their laws and their religion, they were, during the better days of their state,

strangers, in a great measure, to the refinements of luxury. Hence flowed, of course, the many allusions to pastoral life, to the "green pastures and the still waters," and to the care and watchfulness of a shepherd over his flock: which carry, to this day, so much beauty and tenderness in them, in the 23d Psalm, and in many other passages of the poetical writings of Scripture. Hence, all the images founded upon rural employments, upon the wine-press, the thrashing-floor, the stubble, and the chaff. To disrelish all such images is the effect of false delicacy. Homer is at least as frequent, and much more minute and particular in his similes, founded on what we now call low life: but, in his management of them, far inferior to the Sacred Writers, who generally mix with their comparisons of this kind, somewhat of dignity and grandeur to ennoble them. What inexpressible grandeur does the following rural image in Isaiah, for instance, receive from the intervention of the Deity: "The nations shall rush, like the rushings of many waters; but God shall rebuke them, and they shall fly far off: and they shall be chased as the chaff of the mountain before the wind, and like the down of the thistle before the whirlwind."—Figurative allusions, too, we frequently find, to the rites and ceremonies of their religion; to the legal distinctions of things clean and unclean; to the mode of their temple-service; to the dress of their priests, and to the most noted incidents recorded in their Sacred History; as to the destruction of Sodom, the descent of God upon Mount Sinai, and the miraculous passage of the Israelites through the Red Sea. The religion of the Hebrews included the whole of their laws and civil constitution. It was full of splendid external rites, that occupied their senses; it was connected with every part of their national history and establishment; and hence, all ideas founded on religion possessed, in this nation, a dignity and importance peculiar to themselves, and were uncommonly fitted to impress the imagination.—From all this it results, that the imagery of the Sacred Poets is, in a high degree, expressive and natural; it is copied directly from real objects, that were before their eyes: it has this advantage of being more complete within itself, more entirely founded on national ideas

and manners, than that of most other poets. In reading their works, we find ourselves continually in the land of Judea. The palm-trees, and the cedars of Lebanon, are ever rising in our view. The face of their territory, the circumstances of their climate, the manners of the people, and the august ceremonies of their religion, constantly pass, under different forms, before us.—The comparisons employed by the Sacred Poets are generally short, touching on one point only of resemblance, rather than branching out into little episodes. In this respect, they have perhaps an advantage over the Greek and Roman authors, whose comparisons, by the length to which they are extended, sometimes interrupt the narration too much, and carry too visible marks of study and labour; whereas, in the Hebrew poets, they appear more like the glowings of a lively fancy, just glancing aside to some resembling object, and presently returning to its track. Such is the following fine comparison, introduced to describe the happy influence of good government upon a people, in what are called the last words of David, recorded in the second book of Samuel: “He that ruleth over men must be just, ruling in the fear of God; and he shall be as the light of the morning, when the sun riseth; even a morning without clouds; as the tender grass springeth out of the earth by clear shining after rain.” This is one of the most regular and formal comparisons in the Sacred Books.—Allegory likewise is a figure frequently found in them, as in the 80th Psalm, which contains a remarkably fine and well supported one, wherein the people of Israel are compared to a vine. Of parables, which form a species of allegory, the prophetic writings are full: in those early times, indeed, it was universally the mode, throughout all the eastern nations, to convey sacred truths under mysterious figures and representations. But the poetical figure, which, beyond all others, elevates the style of Scripture, and gives it a peculiar boldness and sublimity, is *Prosopopœia*, or Personification. No personifications, employed by any poets, are so magnificent and striking as those of the Inspired Writers. On great occasions they animate every part of nature; especially when any appearance or operation of the Almighty is concerned. “Before

him went the pestilence—the waters saw thee, O God, and were afraid—the mountains saw thee, and they trembled.—The overflowing of the water passed by ;—the deep uttered his voice, and lifted up his hands on high.” When inquiry is made about the place of wisdom, Job introduces “the Deep saying, It is not in me; and the Sea saith, It is not in me ; Destruction and Death say, We have heard the fame thereof with our ears.” That noted sublime passage in the Book of Isaiah, which describes the fall of the king of Assyria, is full of personified objects—the fir-trees and cedars of Lebanon breaking forth into exultation on the fall of the tyrant—Hell from beneath stirring up all the dead to meet him at his coming—and the dead kings introduced as speaking and joining in the triumph. In the same strain are those many lively and passionate apostrophes to cities and countries, to persons and things, with which the prophetic writings every where abound. “O thou sword of the Lord, how long will it be ere thou be quiet ? put thyself up into the scabbard ; rest and be still. How can it be quiet (as the reply is instantly made), seeing the Lord hath given it a charge against Askelon, and the seashore ? There hath he appointed it.”—In general, for it would carry us too far to enlarge upon all the instances, the style of the poetical books of the Old Testament is, beyond the style of all other poetical works, fervid, bold, and animated. It is extremely different from that regular correct expression to which our ears are accustomed in modern poetry. It is the burst of inspiration. The scenes are not coolly described, but represented as passing before our eyes. Every object, and every person, is addressed and spoken to, as if present ; the transition is often abrupt ; the connexion often obscure ; the persons are often changed ; figures crowded and heaped upon one another. Bold sublimity, not correct elegance, is its character. We see the spirit of the writer raised beyond himself, and labouring to find vent for ideas too mighty for his utterance. *Blair.*

ON PRAYER.

FROM the beginning of the world to the present day, the sober-minded and thinking part of mankind have

regarded prayer as a duty of high importance. The wise have considered it as strengthening that sense of dependence, those sentiments of gratitude, of reverence, and of love, which are due, from the creature to the bountiful, ever-present, all-perfect Creator;—as exciting our benevolence towards those, with and for whom we pray;—and as awakening a right sense of our sinfulness and infirmity. The conscientious have esteemed it as a duty enforced by the express command of God. The pious have found it a privilege, conveying joys and honours, which the world knoweth not. Its blessed influence is not confined to the sunny hours of life, when every pulse is health and every sense is pleasure. Thousands have attested that it can pour upon the season of sickness, of poverty, of reproach, and of death, not flashes of momentary rapture merely, but calm, enduring, ineffable joy.—Before it can accomplish such effects, it must have become not only “the form of sound words,” but the utterance of the heart,—not an occasional resort in difficulty or distress, but the settled habit of the soul. I solemnly warn my young readers against considering any form of words, even though drawn from the oracles of the living God, as sufficient of themselves to constitute a prayer acceptable to the Almighty, or useful to the souls of men. *God is a Spirit: and they, that worship him, must worship him in spirit.* No prayer deserves the name, which is not the overflowing of a humble, penitent, and obedient heart; nor can any be accepted of God, which is not made in a lowly sense of our own unworthiness, and offered to him in the name of a crucified Redeemer.—Therefore let every act of devotion be preceded by a sincere and earnest endeavour to awaken in ourselves dispositions suitable to prayer. Before praise, let us raise our minds to contemplate the perfections of Jehovah; lest we incur the guilt of those who *honour him with their mouths while their heart is far from him.* Before thanksgiving, let us call to mind his beneficence; lest an empty form of gratitude, where the sentiment is wanting, be an offence to the Searcher of hearts. Before confession, let us strive to awaken our hatred to our own particular sins; lest a careless catalogue of transgressions, which we intend not to forsake, seem

but an audacious braving of him who *is of purer eyes than to behold iniquity*. Before petition, let us humbly consider the urgency of our necessities, and the feebleness of our claims; lest, in begging that, without which we perish, we come short of the earnestness and importunity to which the Lord has promised his blessing. My dear young friends! (for the intention of doing you a kindness warms my charity towards you,) it is no solitary recluse, no surly misanthrope, no fanatic, no enthusiast, who addresses you; but a woman in the prime of life, as cheerful, as happy, though perhaps not quite so gay as most of you,—active in the business, alive to many of the pleasures, of the present state of existence. But her chief business, as well as yours, is to extend the kingdom of God in her own heart, and in those of others; and, if she shall be made the instrument of attracting even the least of her brethren to that service, which is perfect freedom, she will at once give and receive pleasures, which excel all those of a present world, as far as the capacities of angels exceed those of the babe, that was born this hour. *Mrs Brunton.*

ON MAN.

MAN stands alone in the order and genus, to which naturalists have referred his species. Differing widely in physical conformation from all other classes of animated beings, and distinguished by reason and the power of speech, this wonderfully constructed being seems the bond of connexion between the material and immaterial world. Possessed of powers, which raise him beyond the level of the surrounding creation, and connect him with higher orders of existence, Man is the only being, who looks forward to futurity, and intuitively perceives his connexion with, and dependence upon the great source of intelligence. While the inferior animals enjoy unalloyed the blessings of life and present enjoyment, Man combines the past, the present, and the future, in his calculation of happiness; and, while some parts of his organization connect him with the creatures around him, and sober his rule over beings with animal feelings of pleasure and pain as acute as his own, his intellectual powers, unfettered by the

material organs, which are their instruments, trace the Divinity in all the parts of creation. Hence has arisen the religious feeling among every tribe of human beings however rude; and Man alone seems to connect himself with the great Author of his being, through the medium of intellectual homage; and worships, according to his conceptions of that Almighty Being, the Creator and Preserver of all.—While reason places Man at such an infinite distance from the inferior animals, the faculty of articulate speech and an artificial language widens the barrier still farther: for, although some of the animals possess the power of articulation in a considerable degree, and can communicate by natural signs significant to those of their own species, they totally fail in those powers, which enable Man to classify objects, and to employ sounds or signs as instruments of thought. Brutes possess, indeed, the powers of sensation, perception, and memory, and seem to be capable of intellectual operations to a certain extent; but their action is extremely limited, and bounded to the supply of their animal wants; and, though susceptible of a species of education, their imitative powers are neither subservient to the improvement of the individual nor the species. The faculty, which seems to direct the inferior animals in most of their operations, essentially different from any thing like human intelligence, is called *instinct*. This wonderful faculty, surer in its limited aims than reason, bears, however, no proportion to the general intelligence of the animals, which exercise it: for it has been remarked, that those, in whom the instinctive propensity displays the greatest seeming wisdom and contrivance, are upon other occasions remarkably deficient in sagacity.—The structure of the human body, too, is wonderfully adapted to the various purposes, for which it is destined; and seems the worthy habitation of a being placed at the head, and with the control, of animated nature. But, though the physical structure of man widely separates him from the other portions of animals of the same class, these variations in form and proportions are neither so prominent, nor so totally different in character from the other animal structures, as to account for the superiority which he enjoys. Destined to be nourished on sub-

stances used in common by other animals, the mechanism of his frame must so far correspond with theirs, as to be able to convert these substances to the fluids, which support his animal life: and his organs of sensation must necessarily be analogous, in some degree, to those of beings, on whom the material world is destined to make similar impressions. But no material organs, which Man possesses, abstracted from the mind, of which they are but the instruments, can account for his intellectual supremacy: and all those hypotheses, which would trace Man's intellectual and moral powers, from the absolute or relative size of the brain or other material organs, have miserably failed in connecting mind with matter, or thought with organic structure.

Stark.

NARRATIVE OF THE FEELINGS OF A GENTLEMAN ON
RECEIVING SIGHT AT THE AGE OF TWENTY.

WHILE others are busied in relations, which concern the interest of princes, the peace of nations, and revolutions of empire; I think, though these are very great subjects, my theme of discourse is sometimes to be of matters of yet higher consideration. The slow steps of providence and nature, and strange events which are brought about in an instant, are what, as they come within our view and observation, shall be given to the public. Such things are not accompanied with show and noise, and therefore seldom draw the eyes of the inattentive part of mankind: but are very proper at once to exercise our humanity, please our imaginations, and improve our judgments. It may not, therefore, be unuseful to relate many circumstances, which were observable upon a late cure done upon a young gentleman, who was born blind, and on the 29th of June 1709 received his sight at the age of twenty years, by the operation of an oculist.—The operator, Mr Grant, having observed the eyes of his patient, and convinced his friends and relations, that it was highly probable that he should remove the obstacle, which prevented the use of his sight; all his acquaintance, who had any regard for the young man, or curiosity to be present when one of full age and understanding received a new sense, assembled them-

selves on this occasion. Mr Caswell, minister of the place, being a gentleman particularly curious, desired the whole company, in case the blindness should be cured, to keep silence, and let the patient make his own observations, without the direction of anything he had received by his other senses, or the advantage of discovering his friends by their voices. Among several others, the mother, brethren, sisters, and a young gentlewoman, for whom he had a passion, were present. The work was performed with great skill and dexterity. When the patient first received the dawn of light, there appeared such an ecstasy in his action, that he seemed ready to swoon away in the surprise of joy and wonder. The surgeon stood before him with his instruments in his hands. The young man observed him from head to foot: after which he surveyed himself as carefully, and seemed to compare him to himself; and observing both their hands, seemed to think they were exactly alike, except the instruments which he took for parts of his hands. When he had continued in this amazement for some time, his mother could not longer bear the agitation of so many passions as thronged upon her; but fell upon his neck, crying out, "My son, my son!" The youth knew her voice, and could speak no more than "Oh me! Are you my mother?" and fainted. The whole room, you will easily conceive, were very affectionately employed in recovering him; but, above all, the young gentlewoman who loved him, and whom he loved, shrieked in the loudest manner. That voice seemed to have a sudden effect upon him as he recovered, and he showed a double curiosity in observing her, as she spoke and called to him; until at last he broke out, "What has been done to me? Whither am I carried? Is all this about me the thing I have heard so often of? Is this the light? Is this seeing? Were you always thus happy, when you said you were glad to see each other? Where is Tom, who used to lead me? But I could now, methinks, go any where without him!" He offered to move, but seemed afraid of every thing around him. When they saw his difficulty, they told him, that, until he became better acquainted with his new being, he must let the servant still lead him. The

boy was called for and presented to him. Mr Caswell asked him, "what sort of thing he took Tom to be, before he had seen him?" He answered, "he believed there was not so much of him as himself; but he fancied him the same sort of creature."—The noise of this sudden change made all the neighbourhood throng to the place where he was. As he saw the crowd thickening, he desired Mr Caswell to tell him, how many there were in all to be seen. The gentleman smiling, answered him, that "it would be very proper for him to return to his late condition, and suffer his eyes to be covered, until they had received strength: for he might remember well enough, that by degrees he had, from little and little, come to the strength he had at present, in his ability in walking and moving: and that it was the same thing with his eyes, which, he said, would lose the power of continuing to him that wonderful transport he was now in, except he would be contented to lay aside the use of them, until they were strong enough to bear the light, without so much feeling as he knew he underwent at present." With much reluctance he was prevailed upon to have his eyes bound; in which condition they kept him in a dark room, until it was proper to let the organ receive its objects without farther precaution. During the time of this darkness, he bewailed himself in the most distressed manner, and accused all his friends, complaining that "some incantation had been wrought upon him, and some strange magic used to deceive him into an opinion, that he had enjoyed what they called sight." He added that "the impressions then let in upon his soul would certainly distract him, if he were not so at that present." At another time, he would strive to name the persons he had seen among the crowd after he was couched, and would pretend to speak, in perplexed terms of his own making, of what he in that short time observed. But, after the lapse of some weeks, it was thought fit to unbind his head, and the young woman whom he loved was intrusted to open his eyes accordingly; as well to endear herself to him by such a circumstance, as to moderate his ecstasies by the persuasion of a voice, which had so much power over him, as hers ever had. When this beloved young woman began to take off the

binding of his eyes, she talked to him as follows: "Mr William, I am now taking the binding off, though, when I consider what I am doing, I tremble with the apprehension, that, though I have from my very childhood loved you, dark as you were, and though you had conceived so strong a love for me, you will find there is such a thing as beauty, which may take you away from me for ever." The young man answered, "Dear Lydia, if I am to lose by sight the soft pantings which I have always felt when I heard your voice; if I am no more to distinguish the step of her I love when she approaches me, but to change that sweet and frequent pleasure, for such an amazement, as I knew the little time I lately saw; or, if I am to have any thing besides, which may take from me the sense of what appeared most pleasing to me at that time, which apparition, it seems, was you: pull out these eyes, before they lead me to be ungrateful to you or undo myself. I wished for them but to see you: pull them out, if they are to make me forget you." *Steele.*

ON SPEECH, WRITING, AND PRINTING, AS CONTRIBUTING TO THE PROGRESS OF CIVILISATION.

If you consider the lower animals, you will find that they are, to every useful purpose, deprived of the means of communicating their ideas to each other. They have cries, indeed, by which they express pleasure or pain, fear or hope; but they have no formed speech by which, like men, they can converse together. God Almighty, who called all creatures into existence in such manner as best pleased him, has imparted to these inferior animals no power of improving that situation, or of communicating with each other. There is, no doubt, a difference in the capacity of these inferior classes of creation. But, though one bird may build her nest more neatly than one of a different class, or one dog may be more clever, and more capable of learning tricks than another, yet, as it wants language, to explain to its comrades the advantages which it may

possess, its knowledge dies with it. Thus birds and dogs continue to use the same general habits proper to the species, which they have done since the creation of the world. In other words, animals have a certain degree of sense which is termed instinct, which teaches them to seek their food and provide for their safety, in nearly the same manner as their parents did before them since the commencement of time, but does not enable them to communicate to their successors any improvements, or to derive any increase of knowledge. Thus, you may remark, that the example of the swallow, the wren, and other birds, which cover their nests with a roof to protect them against the rain, is never imitated by other classes, who have continued to construct theirs in the same exposed and imperfect manner since the beginning of the world. If man, though possessed of the same immortal essence or soul, which enables him to choose and refuse, to judge and condemn, to reason and conclude, were to be void of the power of communicating the conclusions, to which his reasoning had conducted him, it is clear that the progress of each individual in knowledge could be only in proportion to his own observation, and his own power of reasoning. But the gift of SPEECH enables any one to communicate to others whatever idea of improvement occurs to him ; which, instead of dying in the bosom of the individual by whom it was first thought of, becomes a part of the stock of knowledge proper to the whole community, which is increased and rendered generally and effectually useful, by the accession of further information, as opportunities occur, or men of reflecting and inventive minds arise in the state.—This use of spoken language, therefore, which so gloriously distinguishes man from the beasts that perish, is the primary means of introducing and increasing knowledge in infant communities. But it is evident that society, when its advance is dependent upon oral tradition alone, must be liable to many interruptions. The imagination of the speaker, and the dulness or want of comprehension of the hearer, may lead to many errors ; and it is generally found, that knowledge makes but very slow progress, until the art of WRITING is discovered ; by which a fixed, accu-

rate, and substantial form can be given to the wisdom of past ages. When this noble art is attained, there is a sure foundation laid for the preservation and increase of knowledge. The record is removed from the inaccurate recollection of the aged, and placed in a safe, tangible, and unperishable form ; which may be subjected to the inspection of various persons, until the sense is completely explained and comprehended with the least possible chance of doubt or uncertainty. By the art of writing a barrier is fixed against those violent changes, so apt to take place in the early ages of society, by which all the fruits of knowledge are frequently destroyed, as those of the earth are by a hurricane. Suppose, for example, a case, which frequently happens in the early history of mankind, that some nation, which has made considerable improvement in the arts is invaded and subdued by another, which is more powerful and numerous, though more ignorant than themselves. It is clear, that, in this case, as the rude and ignorant victors would set no value on the knowledge of the vanquished, it would, if intrusted only to the individuals of the conquered people, be gradually lost and forgotten. But if their useful discoveries were recorded in writing, the manuscripts in which they were described, though they might be neglected for a season, would, if preserved at all, probably attract attention at some more fortunate period. It was thus that, when the empire of Rome, having reached the utmost period of its grandeur, was broken down and conquered, by numerous tribes of ignorant though brave barbarians, those admirable works of classical learning, on which such value is justly placed in the present day, were rescued from total destruction and oblivion, by manuscript copies preserved by chance in the old libraries of churches and convents. It may indeed be taken as an almost infallible maxim, that no nation can make any great progress in useful knowledge or civilisation, until their improvement can be rendered stable and permanent by the invention of writing.—Another discovery, however, almost as important as that of writing, was made during the fifteenth century. I mean the invention of PRINTING. Writing with the hand must be

always a slow, difficult, and expensive operation ; and, when the manuscript is finished, it is perhaps laid aside among the stores of some great library, where it may be neglected by students, and must, at any rate, be accessible to very few persons, and subject to be destroyed by numerous accidents. But the admirable invention of printing enables the artist to make a thousand copies from the original manuscript, by having them stamped upon paper, in far less time, and with less expense, than it would cost to make half a dozen such copies with the pen. From the period of this glorious discovery, knowledge of every kind might be said to be brought out of the cloisters and universities, where it was known only to a few scholars, into the broad light of day, where its treasures were accessible to all men. The Bible itself, in which we find the rules of eternal life, as well as a thousand lessons for our conduct in this world, was, before the invention of printing, totally inaccessible to all save the priests. But, by means of printing, this inestimable treasure, formerly concealed from the public, was placed within the reach alike of the laity and the clergy ; and every one, above the most wretched poverty, may now, at a cheap price, possess himself of the blessed rule of life. The same noble art made knowledge of a temporal kind as accessible as that which concerned religion. Whatever works of history, science, morality, or entertainment, seemed likely to instruct or amuse the reader, were printed and distributed among the people at large by printers and booksellers, who had a profit by doing so. Thus the possibility of important discoveries being forgotten in the course of years, or of the destruction of useful arts or elegant literature, by the loss of the records, in which they are preserved, was in a great measure removed. In a word, the printing press is a contrivance, which enables any one individual to address his whole fellow-subjects on any topic which he thinks important ; and which enables a whole nation to listen to the voice of such individual, however obscure, with the same ease and greater certainty of understanding what he says, than if a chief of Indians were haranguing the tribe at his council-fire. Nor is the important difference to

be forgotten, that the orator can only speak to the persons present, while the author of a book addresses himself, not only to the race now in existence, but to all succeeding generations, while his work shall be held in estimation.

Scott.

ON THE MULTIPLICITY OF TRADES AND EMPLOYMENTS
IN LONDON.

THAT familiarity produces neglect, has been long observed. The effect of all external objects, however great or splendid, ceases with their novelty. The courtier stands without emotion in the royal presence; the rustic tramples under his foot the beauties of the spring, with little attention to their colours or their fragrance; and the inhabitant of the coast darts his eye upon the immense diffusion of waters, without awe, wonder, or terror.—Those, who have passed much of their lives in this great city, look upon its opulence and its multitudes, its extent and variety, with cold indifference; but an inhabitant of the remoter parts of the kingdom is immediately distinguished by a kind of dissipated curiosity, a busy endeavour to divide his attention amongst a thousand objects, and a wild confusion of astonishment and alarm. The attention of a new-comer is generally first struck by the multiplicity of cries that stun him in the streets, and the variety of merchandise and manufactures, which the shopkeepers expose on every hand; and he is apt, by unwary bursts of admiration; to excite the merriment and contempt of those, who mistake the use of their eyes for effects of their understanding, and confound accidental knowledge with just reasoning. But surely these are subjects, on which any man may, without reproach, employ his meditations; the innumerable occupations, among which the thousands, that swarm in the streets of London, are distributed, may furnish employment to minds of every cast, and capacities of every degree. He, that contemplates the extent of this wonderful city, finds it difficult to conceive, by what method plenty is maintained in our markets, and how the inhabitants are regularly supplied

with the necessities of life : but, when he examines the shops and warehouses, sees the immense stores of every kind of merchandise piled up for sale, and runs over all the manufactures of art and products of nature, which are every where attracting his eye and soliciting his purse, he will be inclined to conclude, that such quantities cannot easily be exhausted, and that part of mankind must soon stand still for want of employment, till the wares already provided shall be worn out and destroyed.—As Socrates was passing through the fair at Athens, and casting his eyes over the shops and customers, “How many things are there,” says he, “that I do not want.” The same sentiment is, every moment, rising in the mind of him that walks the streets of London, however inferior in philosophy to Socrates. He beholds a thousand shops crowded with goods, of which he can scarcely tell the use, and which, therefore, he is apt to consider as of no value ; and indeed, many of the arts, by which families are supported, and wealth is heaped together, are of that minute and superfluous kind, which nothing but experience could evince possible to be prosecuted with advantage, and which, as the world might easily want, it could scarcely be expected to encourage. But so it is, that custom, curiosity, or wantonness, supplies every art with patrons, and finds purchasers for every manufacture ; the world is so adjusted, that not only bread, but riches may be obtained without great abilities or arduous performances ; the most unskilful hand and unenlightened mind have sufficient incitements to industry ; for he, that is resolutely busy, can scarcely be in want. There is, indeed, no employment, however despicable, from which a man may not promise himself more than competence, when he sees thousands and myriads raised to dignity, by no other merit, than that of contributing to supply their neighbours with the means of sucking smoke through a tube of clay ; and others raising contributions upon those, whose elegance disdains the grossness of smoky luxury, by grinding the same materials into a powder, that may at once gratify and impair the smell.—Not only by these popular and modish trifles, but by a thousand unheeded and evanescent kinds of business,

are the multitudes of this city preserved from idleness, and consequently from want. In the endless variety of tastes and circumstances, that diversify mankind, nothing is so superfluous, but that some one desires it, or so common, but that some one is compelled to buy it. As nothing is useless but because it is in improper hands, what is thrown away by one is gathered up by another ; and the refuse of part of mankind furnishes a subordinate class with the materials necessary to their support.—When I look round upon those who are thus variously exerting their qualifications, I cannot but admire the secret concatenation of society, that links together the great and the mean, the illustrious and the obscure ; and consider, with benevolent satisfaction, that no man, unless his body or mind be totally disabled, has need to suffer the mortification of seeing himself useless or burthensome to the community. He, that will diligently labour, in whatever occupation, will deserve the sustenance which he obtains, and the protection which he enjoys ; and may lie down every night, with the pleasing consciousness of having contributed something to the happiness of life. Contempt and admiration are equally incident to narrow minds : he, whose apprehensions can take in the whole subordination of mankind, and whose perspicacity can pierce to the real state of things, through the thin veils of fortune or of fashion, will discover meanness in the highest stations, and dignity in the meanest ; and find that no man can become venerable but by virtue, or contemptible but by wickedness.—In the midst of this universal hurry, no man ought to be so little influenced by example, or so void of honest emulation, as to stand a lazy spectator of incessant labour ; or please himself with the mean happiness of a drone, while the active swarms are buzzing about him. No man is without some quality, by the due application of which he might deserve well of the world : and whoever he be, that has but little in his power, should be in haste to do that little, lest he be confounded with him that can do nothing.

Johnson.

TRADES AND EMPLOYMENTS IN LONDON
(CONTINUED).

By this general concurrence of endeavours, arts of every kind have been so long cultivated, that all the wants of man may be immediately supplied: Idleness can scarcely form a wish, which she may not gratify by the toil of others; or Curiosity dream of a toy, which the shops are not ready to afford her. Happiness is enjoyed only in proportion as it is known: and such is the state or folly of man, that it is known only by experience of its contrary. We, who have long lived amidst the conveniences of a town immensely populous, have scarce an idea of a place, where desire cannot be gratified by money. In order to have a just sense of this artificial plenty, it is necessary to have passed some time in a distant colony, or those parts of our island, which are thinly inhabited. He, that has once known how many trades every man, in such situations, is compelled to exercise,—with how much labour the products of nature must be accommodated to human use,—how long the loss or defect of any common utensil must be endured, or by what awkward expedients it must be supplied,—how far men wander with money in their hands, before any can sell them what they wish to buy,—will know how to rate, at its proper value, the plenty and ease of a great city. But, that the happiness of man may still remain imperfect, as wants in this place are easily supplied, new wants are likewise easily created. Every man, in surveying the shops of London, sees numberless instruments and conveniences, of which, while he did not know them, he never felt the need; and yet, when use has made them familiar, wonders how life could be supported without them. Thus it comes to pass, that our desires always increase with our possessions: the knowledge that something remains yet unenjoyed, impairs our enjoyment of the good before us.—They, who have been accustomed to the refinements of science, and multiplications of contrivance, soon lose their confidence in the

unassisted powers of nature, forget the paucity of our real necessities, and overlook the easy methods by which they may be supplied. It were a speculation worthy of a philosophical mind, to examine how much is taken away from our native abilities, as well as added to them, by artificial expedients. We are so accustomed to give and receive assistance, that each of us singly can do little for himself; and there is scarce any one among us, however contracted may be his form of life, who does not enjoy the labour of a thousand artists. But a survey of the various nations, that inhabit the earth, will inform us, that life may be supported with less assistance; and that the dexterity, which practice, enforced by necessity, produces, is able to effect much by very scanty means. The nations of Mexico and Peru erected cities and temples without the use of iron; and, at this day, the rude Indian supplies himself with all the necessaries of life. Sent, like the rest of mankind, naked into the world, as soon as his parents have nursed him up to strength, he is to provide, by his own labour, for his own support. His first care is to find a sharp flint among the rocks: with this he undertakes to fell the trees of the forest. He shapes his bow, heads his arrows, builds his cottage, and hollows his canoe; and, from that time, lives in a state of plenty and prosperity. He is sheltered from the storms, he is fortified against beasts of prey, he is enabled to pursue the fish of the sea, and the deer of the mountains: and, as he does not know, does not envy, the happiness of polished nations, where gold can supply the want of fortitude and skill, and he, whose laborious ancestors have made him rich, may be stretched upon a couch, and see all the treasures of all the elements poured down before him.—This picture of a savage life, if it shows how much individuals may perform, shows likewise how much society is to be desired. Though the perseverance and address of the Indian excite our admiration, they, nevertheless, cannot procure him the conveniences, which are enjoyed by the vagrant beggar of a civilized country. He hunts, like a wild beast, to satisfy his hunger: and, when he lies down to rest after a successful chase, cannot pronounce himself secure against the

danger of perishing in a few days. He is perhaps content with his condition, because he knows not that a better is attainable by man : as he, that is born blind, does not long for the perception of light, because he cannot conceive the advantages, which light would afford him. But hunger, wounds, and weariness are real evils, though he believes them equally incident to all his fellow-creatures : and, when a tempest compels him to lie starving in his hut, he cannot justly be concluded equally happy with those, whom art has exempted from the power of chance, and who make the foregoing year provide for the following.—To receive and to communicate assistance constitutes the happiness of human life. Man may, indeed, preserve his existence in solitude, but can enjoy it only in society. The greatest understanding of an individual, doomed to procure food and clothing for himself, will barely supply him expedients to keep off death from day to day : but as one of a large community, performing only his share of the common business, he gains leisure for intellectual pleasure, and enjoys the happiness of reason and reflection.

Johnson.

MEUX'S BREWERY.

IN Meux's brewery every thing is as filthy, as steam, and smoke, and dust, and rust, can make it ; except the steam-engine, which is as polished and as clean, as the bars of a drawing-room grate. The first operation of this engine is to stir the malt in vats of twenty-eight feet diameter, filled with boiling water : the second is, in due time, to raise the wort to the coolers, in the floor above : then this wort is conveyed by leaden pipes into the tub, where it is to ferment ; and afterwards into the casks, where the porter is first deposited. One of these casks, which I saw, measures seventy feet in diameter, and is said to have cost L.10,000 ; the iron hoop on it weighs eighty tons ; and we were told, that it actually contained, when we saw it, 18,000 barrels, or L.40,000 worth of porter. Another contained 16,000 barrels, and from thence to 4000. There are above seventy casks in the store. *Mrs Brunton.*

PORCELAIN MANUFACTORY AT WORCESTER.

MR F., a most polite and obliging person, called early, and introduced us at Chamberlayne's porcelain manufactory. Every part of this process was shown to us. Flints are first calcined, which whitens them perfectly; then, mixed in certain proportions with gray Cornish granite, they are ground to so fine a powder, as to pass through the closest silk. Water is poured upon this powder, and it is twice strained through silk sieves. The mixture is boiled till it is as thick as cream, and evaporated till it becomes a tough paste. Pieces of it are then placed upon a turning-wheel; and moulded, solely by the hand, with wonderful precision and rapidity. This is the case, at least, with all the pieces of a circular form; such as bowls, plates, cups, and saucers.—Dishes of other forms are made in gypsum moulds; which, though they fit closely at first, soon absorb the moisture, so as to part very freely with the vessel, which they have modelled. Every piece is then placed in a separate clay case. The furnace is filled with these, built closely up, and subjected to a red heat for sixty hours. It is then allowed to cool; the porcelain is withdrawn, and in this state is called the *biscuit*. It is greatly diminished in size by this process. It is now ready to receive the *blue* colour, which is *cobalt*, and looks of a dirty gray, till exposed to the action of the glazing. The glazing consists of lead and glass ground to an impalpable powder, mixed with certain secret ingredients in water. The biscuit is merely dipped into the glazing, and is then baked again for forty hours. It is now ready to receive all other colours which the pattern may require, and the gilding. It is then baked a third time, for ten hours, or more, according to the colours employed. Lastly, the gilding is burnished with bloodstone or agate, and the china is ready for the wareroom. The colours are changed by baking. The greens, when laid on, are very imperfect: the rose-colour is a dull purple; and the gilding is as black as ink. The painting-room had an unwholesome smell,

and the inmates looked sickly. This manufacture is perfectly intelligible throughout, and therefore interesting. You can follow the flint and granite, till, through seventeen different processes, they become a gilded teacup.

Mrs Brunton.

MANUFACTURE OF BUTTON-EYES AND STEEL PLATING.

SPENT the afternoon very agreeably in inspecting Thomason's manufactory (at Birmingham). What seemed the most ingenious machine of all was that, by which button-eyes are made. One part of it pushes forward the wire ; a second bends it into a loop ; a third cuts it ; a fourth flattens the points, that they may join the better with the button ; a fifth pushes the eye, when completed, out of the machine. The *plating on steel* is executed after the article is perfectly formed. The iron knife, fork, or spoon, is dipt into a solution of sal-ammoniac, to cleanse it from grease. It is then powdered with resin to make the solder adhere to the steel, with which it has no affinity. Next it is dipt in the boiling solder,—lead and tin. Then it is instantly fitted with a coat of pure silver, rolled out thin and perfectly flexible : this is pared round the edges with a knife. The article, whatever it is, is then passed through a heat strong enough to melt this solder without affecting the silver. The solder is squeezed out, and falls away in drops ; the silver remains adhering perfectly to the steel. One side only of each article is plated at a time ; the silver, by this means, overlaps at the edges, and is double where it is the most liable to waste. When the goods are finished, they are polished ; first by a fine file, then by a leathern wheel, and lastly by the human hand. Whether it was occasioned by the nature of their work, or by their practice in explaining it, I do not know : but the people employed here showed more intelligence, than any persons of their station whom we have seen in England. I dare say it is good policy to let them show their work : the attempts to explain it will lead them to understand it ; and that will help them to inventions and improvements.

Mrs Brunton.

MANUFACTURE OF BALL-CARTRIDGES.

At Woolwich we saw mountains of balls and thousands of cannon ! We saw the whole process of making ball-cartridges. The balls are cast in a mould, two together, connected by a bar of an inch or two long ; they are then cut asunder, close by each ball, and the little bar is thrown back into the melting-pot ; then each ball is tied in a rag ; then in a paper cone, with room left above it for powder. The powder is run by measure into the cone, and the top is fastened down : the cartridges are then packed in small parcels, and the business is finished. Each of these operations is performed by a different hand, and with despatch almost incredible. One boy fills 4000 cartridges in a day : little creatures, who would scarcely be intrusted in Orkney with the pastoral care of three geese, earn eight or nine shillings a-week in this way. *Mrs Brunton.*

GRADUAL RISE OF MANUFACTURES.

It is pleasing to contemplate a manufacture rising gradually from its first mean state, by the successive labours of innumerable minds ; to consider the first hollow trunk of an oak, in which, perhaps, the shepherd could scarce venture to cross a brook swelled with a shower, enlarged at last into a ship of war, attacking fortresses, terrifying nations, setting storms and billows at defiance, and visiting the remotest parts of the globe. Who, when he saw the first sand or ashes, by a casual intenseness of heat, melted into a metalline form, rugged with excrescences, and clouded with impurities, would have imagined, that, in this shapeless lump, lay concealed so many conveniences of life, as would, in time, constitute a great part of the happiness of the world ? Yet, by some such fortuitous liquefaction, was mankind taught to procure a body, at once, in a high degree, solid and transparent,—which might admit the light of the sun, and exclude the violence of the wind :—which might extend the sight of the philosopher to new ranges of existence ; and charm him, at one time, with the

unbounded extent of the material creation ; and, at another, with the endless subordination of animal life ; —and, what is of yet more importance, might supply the decays of nature, and succour old age with subsidiary sight. Thus was the first artificer in glass employed, though without his own knowledge or expectation. He was facilitating and prolonging the enjoyment of sight, enlarging the avenues of science, and conferring the highest and most lasting pleasures ; he was enabling the student to contemplate nature, and the beauty to behold herself. *Johnson.*

DISSOLUTION OF THE EARTH.

LET us reflect, upon this occasion, on the vanity and transient glory of this habitable world : how, by the force of one element breaking loose upon the rest, all the varieties of nature, all the works of art, all the labours of men are reduced to nothing ! All that we admired and adored before, as great and magnificent, is obliterated or vanished : and another form and face of things, plain, simple, and every where the same, overspreads the whole earth. Where are now the great empires of the world, and their great imperial cities ? their pillars, trophies, and monuments of glory ? Show me where they stood ; read the inscription ; tell me the victor's name. What remains, what impressions, what difference or distinction do you see in this mass of fire ? Rome itself, eternal Rome, the great city, the empress of the world, whose domination makes a great part of the history of this earth,—what is become of her now ? She laid her foundations deep, and her palaces were strong and sumptuous. “ She glorified herself, and lived deliciously, and said in her heart, I sit a queen, and shall see no sorrow.” But her hour is come. She is wiped away from the face of the earth, and buried in everlasting oblivion.—But it is not cities only, and works of men's hands, but the everlasting hills, the mountains and rocks of the earth, are melted as wax before the sun, and “ their place is nowhere found.” Here stood the Alps, the load of the earth, that covered

many countries, and reached their arms from the ocean to the Black Sea. This huge mass of stone is softened and dissolved as a tender cloud into rain. Here stood the African mountains, and Atlas with his top above the clouds : there was frozen Caucasus, and Taurus, and Imaus, and the mountains of Asia ; and yonder, towards the north, stood the Riphæan hills, clothed in ice and snow. All these are vanished,—dropt away as the snow upon their heads. “Great and marvellous are thy works, Lord God Almighty ; just and true are thy ways, thou King of saints. Hallelujah !”

Burnet's Theory of the Earth.

SECTION VI.

POETRY.

I. BLANK VERSE.

THE BIBLE.

Most wondrous Book ! bright candle of the Lord !
 Star of Eternity ! The only star,
 By which the bark of man could navigate
 The sea of life, and gain the coast of bliss
 Securely : only star, which rose on time,
 And, in its dark and troubled billows, still,
 As generation driving swiftly by
 Succeeded generation, threw a ray
 Of Heaven's own light, and, to the hills of God,—
 The everlasting hills,—pointed the sinner's eye.
 By Prophets, Seers, and Priests, and sacred Bards,
 Evangelists, Apostles, men inspired,
 And, by the Holy Ghost, anointed, set
 Apart and consecrated, to declare
 On earth the counsels of the Eternal One,
 This Book—this holiest, this sublimest Book—
 Was sent. Heaven's will, Heaven's code of laws entire

To man, this Book contained ; defined the bounds
Of vice and virtue, and of life and death ;
And what was shadow,—what was substance,—taught.
Pollok.

GOD.

How shall I then attempt to sing of Him,
Who, light himself, in uncreated light
Invested deep, dwells awfully retired
From mortal eye, or angel's purer ken :
Whose single smile has, from the first of time,
Filled overflowing all those lamps of Heaven,
That beam for ever through the boundless sky ;
But, should he hide his face, the astonished sun,
And all the extinguished stars, would loosening reel
Wide from their spheres, and Chaos come again.
And yet, was every faltering tongue of man,
Almighty Father, silent in thy praise,
Thy works themselves would raise a general voice ;
Even in the depth of solitary woods,
By human foot untrod, proclaim thy power ;
And to the quire celestial thee resound,
The eternal cause, support, and end of all !
Thomson.

MAN.

THERE wanted yet the master-work, the end
Of all yet done ; a creature, who, not prone
And brute as other creatures, but endued
With sanctity of reason, might erect
His stature, and upright, with front serene,
Govern the rest, self-knowing ; and from thence
Magnanimous to correspond with Heaven,
But grateful to acknowledge whence his good
Descends, thither with heart, and voice, and eyes
Directed in devotion, to adore
And worship God Supreme, who made him chief
Of all his works.
Milton.

EVENING IN PARADISE.

Now came still Evening on, and Twilight gray
 Had in her sober livery all things clad.
 Silence accompanied ; for beast and bird—
 They to their grassy couch, these to their nests
 Were slunk, all but the wakeful nightingale :
 She all night long her beauteous descant sung :
 Silence was pleased. Now glow'd the firmament
 With living sapphires ; Hesperus, that led
 The starry host, rode brightest, till the Moon,
 Rising in clouded majesty, at length
 Apparent queen unveil'd her peerless light,
 And o'er the dark her silver mantle threw :
 When Adam thus to Eve, " Fair consort, the hour
 Of night, and all things now retired to rest,
 Mind us of like repose ; since God hath set
 Labour and rest, as day and night, to men
 Successive ; and the timely dew of sleep,
 Now falling with soft cumbrous weight, inclines
 Our eyelids. Other creatures, all day long,
 Rove idle, unemploy'd, and less need rest :
 Man hath his daily work of body or mind
 Appointed, which declares his dignity,
 And the regard of Heaven on all his ways ;
 While other animals inactive range,
 And of their doings God takes no account." *Milton.*

ADAM'S REFLECTIONS ON HIMSELF.

As new waked from soundest sleep,
 Soft on the flowery herb I found me laid,
 Straight towards heaven my wondering eyes I turn'd,
 And gazed awhile the ample sky ; till, raised
 By quick instinctive motion, up I sprung,
 As thitherward endeavouring, and upright
 Stood on my feet. About me round I saw
 Hill, dale, and shady woods, and sunny plains,

And liquid lapse of murmuring streams ; by these,
 Creatures that lived and moved, and walk'd or flew ;
 Birds on the branches warbling. All things smiled
 With fragrance ; and with joy my heart o'erflow'd.
 Myself I then perused, and limb by limb
 Survey'd, and sometimes went, and sometimes ran
 With supple joints, as lively vigour led :
 But who I was, or where, or from what cause,
 Knew not. To speak I tried, and forthwith spake ;
 My tongue obey'd, and readily could name
 Whate'er I saw. " Thou Sun," said I, " fair light,
 And thou enlighten'd Earth, so fresh and gay,
 Ye hills and dales, ye rivers, woods, and plains,
 And ye that live and move, fair creatures, tell,
 Tell, if ye saw, how I came thus, how here ?
 Not of myself ! By some great Maker, then,
 In goodness and in power pre-eminent :
 Tell me how I may know him, how adore,
 From whom I have that thus I move, and live,
 And feel that I am happier than I know." *Milton.*

BLESSINGS OF SOCIETY.

With thee conversing, I forget all time,
 All seasons and their change ; all please alike.
 Sweet is the breath of Morn, her rising sweet,
 With charm of earliest birds ; pleasant the Sun,
 When first, on this delightful land, he spreads
 His orient beams, on herb, tree, fruit, and flower,
 Glistening with dew ; fragrant the fertile Earth
 After soft showers ; and sweet the coming on
 Of grateful Evening mild ; then silent Night,
 With this her solemn bird, and this fair Moon,
 And these the gems of Heaven, her starry train :
 But neither breath of Morn, when she ascends
 With charm of earliest birds ; nor rising Sun
 On this delightful land ; nor herb, fruit, flower,
 Glistening with dew ; nor fragrance after showers ;
 Nor grateful Evening mild ; nor silent Night,
 With this her solemn bird ; nor walk by moon
 Or glittering starlight—without thee is sweet.
Milton.

FALL OF MAN.

OF man's first disobedience, and the fruit
 Of that forbidden tree, whose mortal taste
 Brought death into the world, and all our wo,
 With loss of Eden, till one greater man
 Restore us, and regain the blissful seat,
 Sing heavenly muse ; that, on the secret top
 Of Oreb or of Sinai, didst inspire
 That shepherd, who first taught the chosen seed,
 In the beginning how the heavens and earth
 Rose out of chaos. Or, if Sion hill
 Delight thee more, and Siloa's brook, that flow'd
 Fast by the Oracle of God ; I thence
 Invoke thy aid to my adventurous song,
 That, with no middle flight, intends to soar
 Above the Aonian mount, while it pursues
 Things unattempted yet in prose or rhyme.
 And chiefly thou, O Spirit, that dost prefer,
 Before all temples, the upright heart and pure,
 Instruct me, for thou know'st. Thou, from the first,
 Wast present, and, with mighty wings outspread,
 Dove-like sat'st brooding on the vast abyss,
 And mad'st it pregnant. What in me is dark,
 Illumine ; what is low, raise and support ;
 That, to the height of this great argument,
 I may assert eternal providence,
 And justify the ways of God to men.—
 Say first, for Heaven hides nothing from thy view,
 Nor the deep tract of hell ; say first, what cause
 Moved our grand parents, in that happy state
 Favour'd by Heaven so highly, to fall off
 From their Creator, and transgress his will,
 For one restraint, lords of the world besides ?
 Who first seduced them to that foul revolt ?—
 The infernal serpent. He it was whose guile
 Stirr'd up with envy and revenge, deceived
 The mother of mankind, what time his pride
 Had cast him out from heaven, with all his host
 Of rebel angels ; by whose aid, aspiring

To set himself in glory above his peers,
 He trusted to have equall'd the Most High,
 If he opposed ; and, with ambitious aim,
 Against the throne and monarchy of God,
 Raised impious war in heaven, and battle proud,
 With vain attempt. Him the Almighty Power
 Hurl'd headlong, flaming, from the ethereal sky,
 With hideous ruin and combustion ; down
 To bottomless perdition ; there to dwell
 In adamant chains and penal fire,—
 Who durst defy the Omnipotent to arms !

Milton.

NATURE'S MIRACLES.

WHAT prodigies can power Divine perform
 More grand, than it produces year by year,
 And all in sight of inattentive man ?
 Familiar with the effect, we slight the cause,
 And, in the constancy of nature's course,
 And regular return of genial months,
 And renovation of a faded world,
 See nought to wonder at. Should God again,
 As once in Gibeon, interrupt the race
 Of the undeviating and punctual sun,
 How would the world admire ! but speaks it less
 An agency Divine, to make him know
 The moment when to sink, and when to rise,
 Age after age, than to arrest his course ?
 All we behold is miracle : but, seen
 So duly, all is miracle in vain.
 Where now the vital energy that moved,
 While summer was, the pure and subtile lymph,
 Through the imperceptible meandering veins
 Of leaf and flower ? It sleeps : and the icy touch
 Of unprolific winter has impress'd
 A cold stagnation on the intestine tide.
 But, let the months go round, a few short months,
 And all shall be restored. These naked shoots,
 Barren as lances, among which the wind
 Makes wintry music, sighing as it goes,

Shall put their graceful foliage on again,
 And more aspiring, and with ampler spread,
 Shall boast new charms, and more than they have lost.
 From dearth to plenty, and from death to life,
 Is Nature's progress, when she lectures man
 In heavenly truth : evincing, as she makes
 The grand transition, that there lives and works
 A soul in all things, and that soul is God.
 The beauties of the wilderness are his,
 That make so gay the solitary place
 Where no eye sees them. And the fairer forms,
 That cultivation glories in, are his.
 He sets the bright procession on its way,
 And marshals all the order of the year ;
 He marks the bounds, which Winter may not pass,
 And blunts his pointed fury : in its case,
 Russet and rude, folds up the tender germe,
 Uninjured, with inimitable art ;
 And, ere one flow'ry season fades and dies,
 Designs the blooming wonders of the next.

Comper.

ADDRESS TO NATURE.

O NATURE ! all-sufficient ! over all !
 Enrich me with the knowledge of thy works !
 Snatch me to heaven : thy rolling wonders there ;
 World beyond world, in infinite extent,
 Profusely scatter'd o'er the blue immense,
 Show me ; their motions, periods, and their laws,
 Give me to scan. Through the disclosing deep,
 Light my blind way ; the mineral strata there ;
 Thrust blooming thence the vegetable world ;
 O'er that the rising system, more complex,
 Of animals ; and, higher still, the mind,
 The varied scene of quick-compounded thought,
 And where the mixing passions endless shift ;
 These ever open to my ravish'd eye ;
 A search the flight of time can ne'er exhaust !
 But if to that unequal ; if the blood,

N

In sluggish streams about my heart, forbid
 That best ambition,—under closing shades,
 Inglorious, lay me by the lowly brook,
 And whisper to my dreams. From thee begin,
 Dwell all on thee, with thee conclude my song,
 And let me never,—never stray from thee.

Thomson.

BEAUTIES OF NATURE LOST TO THE BLIND.

Thus with the year
 Seasons return ; but not to me returns
 Day, or the sweet approach of even or morn,
 Or sight of vernal bloom, or summer's rose,
 Or flocks, or herds, or human face Divine,
 But cloud, instead, and ever-during dark
 Surrounds me : from the cheerful ways of men
 Cut off ; and, for the book of knowledge fair,
 Presented with a universal blank
 Of nature's works, to me expunged and rased,
 And wisdom, at one entrance, quite shut out.

Milton.

CONSTANCY AMID GENERAL DEFECTION.

SERVANT of God, well done ! Well hast thou fought
 The better fight ; who single hast maintain'd,
 Against revolted multitudes, the cause
 Of Truth, in word mightier than they in arms :
 And, for the testimony of Truth, hast borne
 Universal reproach, far worse to bear
 Than violence : for this was all thy care,
 To stand approved in sight of God, though worlds
 Judged thee perverse.

Milton.

DUTY AND HAPPINESS OF MAN.

HENCEFORTH I learn, that to obey is best,
 And love, with fear, the only God : to walk

As in his presence ; ever to observe
 His providence ; and on him depend,
 Merciful o'er all his works ; with good
 Still overcoming evil, and by small
 Accomplishing great things, by things deem'd weak
 Subverting worldly strong, and worldly wise
 By simply weak ; that suffering for truth's sake,
 Is fortitude to highest victory,
 And, to the faithful, death the gate of life ;
 Taught this by his example, whom I now
 Acknowledge my Redeemer, ever blest.

Milton.

CHILDHOOD.

Not happy only, but the cause of joy
 Which those who never tasted always mourn'd.
 What tongue?—no tongue—shall tell, what bliss
 o'erflow'd
 The mother's tender heart, while round her hung
 The offspring of her love, and lisped her name :
 As living jewels dropt unstain'd from heaven,
 That made her fairer far, and sweeter seem,
 Than every ornament of costliest hue.
 And who hath not been ravish'd as she pass'd,
 With all her playful band of little ones,
 Like Luna, with her daughters of the sky,
 Walking in matron-majesty and grace ?
 All who had hearts here pleasure found : and oft
 Have I, when tired with heavy task, relax'd
 My weary thoughts among their guiltless sports,
 And led them by their little hands a-field ;
 And watch'd them run and crop the tender flower,
 Which oft unask'd they brought me, and bestow'd
 With smiling face, that waited for a look
 Of praise,—and answer'd curious questions, put
 In much simplicity, but ill to solve,
 And heard their observations, strange and new,
 And settled whiles their little quarrels, soon
 Ending in peace, and soon forgot in love.

Pollok.

FRIENDSHIP.

MANY sounds were sweet,
 Most ravishing, and pleasant to the ear ;
 But sweeter none than voice of faithful friend,—
 Sweet always, sweetest heard in loudest storm.
 Some I remember, and will ne'er forget,
 My early friends, friends of my evil day ;
 Friends in my mirth, friends in my misery too ;
 Friends given by God in mercy and in love ;
 My counsellors, my comforters and guides ;
 My joy in grief, my second bliss in joy ;
 Companions of my young desires ; in doubt
 My oracles, my wings in high pursuit.
 Oh ! I remember, and will ne'er forget,
 Our meeting-spots, our chosen sacred hours ;
 Our burning words, that utter'd all the soul ;
 Our faces beaming with unearthly love ;
 Sorrow with sorrow sighing, hope with hope
 Exulting, heart embracing heart entire.
 As birds of social feather helping each
 His fellow's flight, we soar'd into the skies,
 And cast the clouds beneath our feet, and earth
 With all her tardy leaden-footed cares,
 And talk'd the speech, and ate the food of heaven.
Pollok.

NOVELTY.

WITNESS the sprightly joy, when aught unknown
 Strikes the quick sense, and wakes each active power
 To brisker measures. Witness the neglect
 Of all familiar prospects, though beheld
 With transport once ;—the fond attentive gaze
 Of young astonishment ;—the sober zeal
 Of age commenting on prodigious things :—
 For such the bounteous Providence of Heaven,
 In every breast implanting the desire
 Of objects new and strange, to urge us on

With unremitted labour to pursue
 Those sacred stores, that wait the ripening soul
 In truth's exhaustless bosom. What need words
 To paint its power? For this the daring youth
 Breaks from his weeping mother's anxious arms,
 In foreign climes to rove; the pensive sage,
 Heedless of sleep or midnight's harmful damp,
 Hangs o'er the sickly taper; and, untired,
 The virgin follows, with enchanted step,
 The mazes of some wild and wondrous tale,
 From morn to eve. Hence, finally, by night,
 The village matron, round the blazing hearth,
 Suspends the infant audience with her tales,
 Breathing astonishment! of witching rhymes
 And evil spirits; of the deathbed call
 Of him, who robb'd the widow, and devour'd
 The orphan's portion; of unquiet souls
 Risen from the grave, to ease the heavy guilt
 Of deeds in life conceal'd; of shapes, that walk,
 At dead of night, and clank their chains, and wave
 The torch of hell around the murderer's bed.
 At every solemn pause, the crowd recoil,
 Gazing each other speechless, and congeal'd
 With shivering sighs; till, eager for the event,
 Around the beldame all erect they hang,
 Each trembling heart with grateful terrors quell'd.
Akenside.

LUXURY OF GRIEF AND PITY.

Ask the faithful youth,

Why the cold urn of her, whom long he loved,
 So often fills his arms,—so often draws
 His lonely steps, silent and unseen,
 To pay the mournful tribute of his tears?
 Oh! he will tell thee, that the wealth of worlds
 Should ne'er seduce his bosom to forego
 Those sacred hours, when, stealing from the noise
 Of care and envy, sweet remembrance soothes,
 With virtue's kindest looks, his aching breast,
 And turns his tears to rapture. Ask the crowd,

Which flies impatient from the village-walk
 To climb the neighbouring cliffs, when far below
 The savage winds have hurl'd upon the coast
 Some helpless bark ; while holy Pity melts
 The general eye, or Terror's icy hand
 Smites their distorted limbs and horrent hair ;
 While every mother closer to her breast
 Catcheth her child ; and, pointing where the waves
 Foam through the shatter'd vessel, shrieks aloud,
 As one poor wretch, who spreads his piteous arms
 For succour, swallow'd by the roaring surge,—
 As now another, dash'd against the rock,
 Drops lifeless down. O ! deemest thou indeed
 No pleasing influence here by nature given
 To mutual terror and compassion's tears ?
 No tender charm mysterious, which attracts,
 O'er all that edge of pain, the social powers,
 To this their proper action and their end ?

Akenside.

GRIEF fills the room up of my absent child ;
 Lies in his bed ; walks up and down with me ;
 Puts on his pretty looks ; repeats his words ;
 Remembers me of all his gracious parts ;
 Stuffs out his vacant garments with his form :
 Then have I reason to be *fond* of grief.

Shakspeare.

MERCY.

No ceremony that to great ones 'longs,
 Not the king's crown, nor the deputed sword,
 The marshal's truncheon, nor the judge's robe,
 Become them with one-half so good a grace,
 As mercy does.
 Why, all the souls that were, were forfeit once ;
 And he, that might the 'vantage best have took
 Found out the remedy. How would you be,
 If he, which is the top of judgment, should
 But judge you as you are ? O think on that ;

And mercy then will breathe within your lips,
Like man new made. *Shakspeare.*

THE quality of mercy is not strain'd ;
It droppeth as the gentle rain from heaven
Upon the place beneath : it is twice bless'd :
It blesseth him that gives, and him that takes :
'Tis mightiest in the mightiest : it becomes
The throned monarch better than his crown :
His sceptre shows the force of temporal power,
The attribute to awe and majesty,
Wherein doth sit the dread and fear of kings ;
But mercy is above this sceptred sway,
It is enthroned in the hearts of kings,
It is an attribute to God himself ;
And earthly power doth then show likest God's,
When mercy seasons justice. Think of this.
That, in the course of justice, none of us
Should see salvation. We do pray for mercy ;
And that same prayer doth teach us all to render
The deeds of mercy. *Shakspeare.*

REFLECTIONS ON LEAVING SCOTLAND.

AND must I leave,
Dear land, thy bonny braes, thy dales,
Each haunted by its wizard stream, o'erhung
With all the varied charms of bush and tree ;
Thy towering hills, the lineaments sublime
Unchanged of Nature's face, which wont to fill
The eye of Wallace, as he musing plann'd
The grand emprise of setting Scotland free ?
And must I leave the friends of youthful years,
And mould my heart anew, to take the stamp
Of foreign friendships in a foreign land,
And learn to love the music of strange tongues ?
Yes, I may love the music of strange tongues,
And mould my heart anew to take the stamp
Of foreign friendships in a foreign land :—
But to my parched mouth's roof cleave this tongue,

My fancy fade into the yellow leaf,
 And this oft-pausing heart forget to throb,
 If, Scotland, thee and thine I e'er forget.

Grahame.

SCOTTISH EXILE'S REFLECTIONS.

WHAT though the cluster'd vine there hardly tempts
 The traveller's hand ; though birds of dazzling plume
 Perch on the loaded boughs : give me thy woods,
 (Exclaims the banish'd man,) thy barren woods,
 Poor Scotland ! sweeter there the reddening haw,
 The sloe, or rowan's bitter bunch, than here
 The purple grape : dearer the redbreast's note,
 That mourns the fading year in Scotia's vales,
 Than Philomel's, where spring is ever new :
 More dear to me the redbreast's sober suit,
 So like a wither'd leaflet, than the glare
 Of gaudy wings, that make the iris dim.

Grahame.

ART AND INDUSTRY.

THESE are thy blessings, Industry ! rough power,
 Whom labour still attends, and sweat, and pain ;
 Yet the kind source of every gentle art,
 And all the soft civility of life ;
 Raiser of human kind ! by Nature cast,
 Naked and helpless, out amid the woods
 And wilds, to rude inclement elements ;
 With various seeds of art deep in the mind
 Implanted, and profusely pour'd around
 Materials infinite, but idle all.
 Still unexerted in the unconscious breast,
 Slept the lethargic powers ; corruption still,
 Voracious, swallow'd what the liberal hand
 Of bounty scatter'd o'er the savage year ;
 And still the sad barbarian, roving, mix'd
 With beasts of prey, or for his acorn-meal
 Fought the fierce tusky boar ; a shivering wretch,

Aghast and comfortless, when the bleak North,
 With winter charged, let the mix'd tempest fly,
 Hail, rain, and snow, and bitter-breathing frost,
 Then to the shelter of the hut he fled,
 And the wild season, sordid, pined away,
 For home he had not. Home is the resort
 Of love, of joy, of peace and plenty, where,
 Supported and supporting, polish'd friends
 And dear relations mingle into bliss.
 But this the rugged savage never felt,
 Even desolate in crowds; and thus his days
 Roll'd heavy, dark, and unenjoy'd along:
 A waste of time: till Industry approach'd
 And rous'd him from his miserable sloth;
 His faculties unfolded; pointed out
 Where lavish Nature the directing hand
 Of art demanded: show'd him how to raise
 His feeble force by the mechanic powers,
 To dig the mineral from the vaulted earth,
 On what to turn the piercing rage of fire,
 On what the torrent, and the gather'd blast;
 Gave the tall ancient forest to his axe;
 Taught him to chip the wood and hew the stone,
 Till, by degrees, the finish'd fabric rose;
 Tore from his limbs the blood-polluted fur,
 And wrapt them in the woolly vestment warm,
 Or bright in glossy silk, and flowing lawn;
 With wholesome viands fill'd his table, pour'd
 The generous glass around, inspired to wake
 The life-refining soul of decent wit:
 Nor stopt at barren bare necessity,
 But, still advancing bolder, led him on
 To pomp, to pleasure, elegance and grace;
 And, breathing high ambition through his soul,
 Set science, wisdom, glory, in his view,
 And bade him be the lord of all below. *Thomson.*

SCOTCH AND ENGLISH WARS.

WAR I detest: but war with foreign foes,
 Whose manners, language, and whose looks are strange,

Is not so horrid, nor to me so hateful,
 As that, which, with our neighbours, oft we wage.
 A river here, there an ideal line
 By fancy drawn, divides the sister kingdoms.
 On each side dwells a people similar,
 As twins are, to each other ; valiant both ;
 Both, for their valour, famous through the world.
 Yet will they not unite their kindred arms,
 And, if they must have war, wage distant war,
 But with each other fight in cruel conflict ?
 Gallant in strife, and noble in their ire,
 The battle is their pastime. They go forth
 Gay in the morning, as to summer sport ;
 When evening comes, the glory of the morn,
 The youthful warrior is a clod of clay.
 Thus fall the prime of either hapless land,
 And such the fruit of Scotch and English wars.

Home.

PLAGUE IN LONDON.

O UNREJOICING Sabbath ! Not of yore
 Did thy sweet evenings die along the Thames
 Thus silently ! Now every sail is furl'd,
 The oar hath dropt from out the rower's hand,
 And on thou flow'st in lifeless majesty,
 River of a desert lately filled with joy !
 O'er all that mighty wilderness of stone
 The air is clear and cloudless, as at sea
 Above the gliding ship. All fires are dead,
 And not one single wreath of smoke ascends
 Above the stillness of the towers and spires.
 How idly hangs that arch magnificent
 Across the idle river ! Not a speck
 Is seen to move along it. There it hangs
 Still as a rainbow in the pathless sky.

* * *

Know ye what you will meet with in the city ?
 Together will ye walk through long, long streets,
 All standing silent as a midnight church.

You will hear nothing, but the brown red grass
 Rustling beneath your feet ; the very beating
 Of your own hearts will awe you ; the small
 Voice of that vain bauble, idly counting time,
 Will speak a solemn language in the desert.
 Look up to heaven, and there the sultry clouds,
 Still threatening thunder, lower with grim delight,
 As if the spirit of the plague dwelt there,
 Darkening the city with the shadows of death.
 Know ye that hideous hubbub ? Hark ! far off
 A tumult, like an echo, on it comes,
 Weeping and wailing, shrieks and groaning prayer ;
 And, louder than all, outrageous blasphemy.
 The passing storm hath left the silent streets.
 But are these houses near you tenantless ?
 Over your heads from a window suddenly
 A ghastly face is thrust, and yells of death
 With voice not human. Who is he that flies,
 As if a demon dogg'd him on his path ?
 With ragged hair, white face and bloodshot eyes,
 Raving, he rushes past you : till he falls,
 As if struck by lightning, down upon the stones,
 Or, in blind madness dash'd against the wall,
 Sinks backward into stillness. Stand aloof,
 And let the pest's triumphal chariot
 Have open way, advancing to the tomb.
 See how he mocks the pomp and pageantry
 Of earthly kings ! A miserable cart,
 Heap'd up with human bodies : dragg'd along
 By shrunk steeds, skeleton anatomies !
 And onwards urged by a wan meagre wretch,
 Doom'd never to return from the foul pit,
 Whither, with oaths, he drives his load of horror.
 Would you look in ? Gray hairs and golden tresses,
 Wan shrivel'd cheeks, that have not smiled for years,
 And many a rosy visage smiling still :
 Bodies in the noisome weeds of beggary wrapt,
 With age decrepit, and wasted to the bone ;
 And youthful frames, august and beautiful,
 In spite of mortal pangs,—there lie they all
 Embraced in ghastliness ; but look not long,
 For haply, amid the faces glimmering there,

The well-known cheek of some beloved friend
Will meet thy gaze, or some small snow-white hand,
Bright with the ring that holds her lover's hair.

Wilson.

TRoubLED CONSCIENCE.

CANST thou not minister to a mind diseased,
Pluck from the memory a rooted sorrow,
Raze out the written troubles of the brain,
And, with some sweet oblivious antidote,
Cleanse the foul bosom of that perilous stuff,
Which weighs upon the heart? *Shakespeare.*

ON LAMENTATION OVER PAST HAPPINESS.

So they set out
Upon ten thousand different routes, to seek
What they had left behind,—to seek what they
Had lost,—for still, as something once possess'd
And lost, true happiness appear'd. All thought
They once were happy; and, even while they smoked
And panted in the chase, believed themselves
More miserable to-day than yesterday,—
To-morrow than to-day. When youth complain'd,
The aged sinner shook his hoary head,
As if he meant to say, "Stop till you come
My length, and then you may have cause to sigh."
At twenty cried the boy, who now had seen
Some blemish in his joys, "How happily
Plays yonder child, that busks the mimic babe,
And gathers gentle flowers, and never sighs!"
At forty, in the fervour of pursuit,
Far on, in disappointment's dreary vale,
The grave and sage-like man look'd back, upon
The stripling youth of plump unseared hope,
Who gallop'd gay and briskly up behind,—
And moaning wish'd himself eighteen again.
And he of threescore years and ten, in whose

Chill'd eye, fatigued with gaping after hope,
 Earth's freshest verdure seem'd but blasted leaves—
 Praised childhood, youth, and manhood, and denounced
 Old age alone as barren of all joy:—
 Decisive proof, that men had left behind
 The happiness they sought, and taken a most
 Erroneous path; since every step they took
 Was deeper mire. *Pollok.*

TRUE HAPPINESS NOT LOCAL.

TRUE happiness had no localities,
 No tones provincial, no peculiar garb.
 Where duty went, she went; with justice went;
 And went with meekness, charity, and love.
 Where'er a tear was dried; a wounded heart
 Bound up; a bruised spirit with the dew
 Of sympathy anointed; or a pang
 Of honest suffering soothed; or injury,
 Repeated oft, as oft by love forgiven;
 Where'er an evil passion was subdued,
 Or virtue's feeble embers fann'd: where'er
 A sin was heartily abjured and left;
 Where'er a pious act was done, or breathed
 A pious prayer, or wish'd a pious wish,—
 There was a high and holy place, a spot
 Of sacred light, a most religious fane,
 Where happiness, descending, sat and smiled.
Pollok.

THE VIRTUOUS PEASANT OF THE ALPS.

“WHAT is it
 That thou dost see, or think thou look'st upon?”
 “Myself and thee—a peasant of the Alps—
 Thy humble virtues, hospitable home,
 And spirit patient, pious, proud, and free;
 Thy self-respect, grafted on innocent thoughts;

Thy days of health, and nights of sleep ; thy toils,
 By danger dignified, yet guiltless : hopes
 Of cheerful old age and a quiet grave,
 With cross and garland over its green turf,
 And thy grandchildren's love for epitaph.
 This do I see,—and then I look within.”—

Byron.

RESIGNATION.

O THOU great arbiter of life and death,
 Nature's immortal immaterial Sun !
 Whose all-prolific beam late called me forth
 From darkness,—teeming darkness, where I lay
 The worm's inferior, and, in rank, beneath
 The dust I tread on,—high to bear my brow,
 To drink the spirit of the golden day,
 And triumph in existence : and couldst know
 No motive but my bliss ; and hast ordain'd
 A rise in blessing ! with the patriarch's joy
 Thy call I follow to the land unknown ;
 I trust in thee, and know in whom I trust ;
 Or life, or death is equal ; neither weighs ;
 All weight in this,—O let me live to thee.

Young.

TO-MORROW.

To-morrow ! didst thou say ?
 Methought I heard Horatio say To-morrow.
 Go to,—I will not hear of it,—To-morrow !
 'Tis a sharper, who stakes his penury
 Against thy plenty ;—who takes thy ready cash,
 And pays thee nought, but wishes, hopes, and promises,
 The currency of idiots. Injurious bankrupt,
 That gulls the easy creditor !—To-morrow !
 It is a period nowhere to be found
 In all the hoary registers of time,
 Unless perchance in the fool's calendar.
 Wisdom disclaims the word, nor holds society

With those who own it. No, my Horatio,
 'Tis Fancy's child, and Folly is its father;
 Wrought of such stuff as dreams are; and baseless
 As the fantastic visions of the evening.
 But soft, my friend,—arrest the present moments;
 For, be assured, they all are arrant telitales;
 And, though their flight be silent, and their path
 Trackless as the wing'd couriers of the air,
 They post to heaven and there record thy folly;
 Because, though station'd on the important watch,
 Thou, like a sleeping faithless sentinel,
 Didst let them pass unnoticed, unimproved.
 And know, for that thou slumberest on the guard,
 Thou shalt be made to answer at the bar
 For every fugitive; and, when thou thus
 Shalt stand impleaded at the high tribunal
 Of hoodwink'd Justice, who shall tell thy audit?
 Then stay the present instant, dear Horatio;
 Imprint the marks of wisdom on its wings.
 'Tis of more worth than kingdoms! far more precious
 Than all the crimson treasures of life's fountain!—
 Oh! let it not elude thy grasp: but, like
 The good old patriarch upon record,
 Hold the fleet angel fast until he bless thee.

Cotton.

ON BEING PREPARED FOR DEATH.

AND now, Lorenzo, dost thou wrap thy soul
 In soft security, because unknown
 Which moment is commission'd to destroy?
 In death's uncertainty the danger lies.
 Is death uncertain? Therefore thou be fit;
 Fix'd as a sentinel, all eye, all ear,
 All expectation of the coming foe,
 Rouse, stand in arms, nor lean against thy spear;
 Lest slumber steal one moment o'er thy soul,
 And fate surprise thee nodding. Watch, be strong!
 Thus give each day the merit and renown
 Of dying well: though doom'd but once to die.

Nor let life's period, hidden, (as from most,)
Hide too from thee the precious use of life.

Young.

DEATHBED OF THE JUST.

THE chamber, where the good man meets his fate,
Is privileged beyond the common walk
Of virtuous life, quite in the verge of heaven.
Fly, ye profane! If not, draw near with awe,
Receive the blessing, and adore the chance,
That threw in this Bethesda your disease:
If unrestored by this despair your cure,
For here resistless demonstration dwells.
A deathbed's a detector of the heart.
Here tired Dissimulation drops her mask,
Through life's grimace, that mistress of the scene!
Here real and apparent are the same.
You see the *man*; you see his hold on heaven;
If sound his virtue,—as Philemon's sound.
Heaven waits not the last moment; owns her friends
On this side death; and points them out to men,—
A lecture silent, but of sovereign power!
To vice confusion, and to virtue peace.
Whatever farce the boastful hero plays,
Virtue alone has majesty in death,
And greater still the more the tyrant frowns.

Young.

DISSOLUTION OF ALL THINGS.

THE cloud-capt towers, the gorgeous palaces,
The solemn temples, the great globe itself,
Yea, all which it inherit, shall dissolve;
And, like the baseless fabric of a vision,
Leave not a rack behind.

Shakspeare.

WHAT does not fade? The tower, that long hath stood
The crush of thunder, and the warring winds,

Shook by the slow but sure destroyer Time,
 Now hangs in doubtful ruin o'er its base :
 And flinty pyramids, and walls of brass
 Descend : the Babylonian spires are sunk :
 Achaia, Rome, and Egypt moulder down.
 Time shakes the stable tyranny of thrones,
 And tottering empires crush by their own weight.
 This huge rotundity we tread grows old :
 And all those worlds that roll around the sun,—
 The sun himself,—shall die ; and ancient night
 Again involve the desolate abyss :
 Till the great Father, through the lifeless gloom,
 Extend his arm, to light another world,
 And bid new planets roll by other laws. *Armstrong.*

II. RHYME.

MAN.

THE world a palace was without a guest,
 Till one appears, that must excel the rest :
 One—like the Author, whose capacious mind
 Might, by the glorious work, the Maker find ;
 Might measure heaven, and give each star a name ;
 With art and courage the rough ocean tame ;
 Over the globe with swelling sails might go,
 And, that 'tis round, by his experience know ;
 Make strongest beasts obedient to his will,
 And serve his use, the fertile earth to till.
 When, by his word, God had accomplish'd all,
 Man to create, he did a council call,
 Man to create, he did a council call,
 Employ'd his hand to give the dust he took
 A graceful figure and majestic look ;
 With his own breath, conveyed into his breast
 Life, and a soul fit to command the rest ;
 Worthy alone to celebrate his name
 For such a gift, and tell from whence it came.
 Birds sing his praises in a wilder note,
 But not with lasting numbers, and with thought,—

Man's great prerogative !—But above all,
 His grace abounds in his new favourite's fall.
 If he create, it is a world he makes ;
 If he be angry, the creation shakes ;
 From his just wrath our guilty parents fled ;
 He cursed the earth, but bruised the serpent's head.
Waller.

OUR FIRST PARENTS.

BEAUTIFUL beings ! amidst flowers and shades,
 And birds, and happy creatures of all kinds,
 Rejoicing ; but more in yourselves,—in minds
 Sinless, which mutual love and bliss pervades,
 And gratitude to heaven !—Ah ! wherefore fades
 That bloom of being ? Wherefore to the winds
 Thrown that frail pile of blessedness ? What finds
 Your vain ambition, that so soon upbraids
 Your Maker as unkind ? Say, will the snake,
 Your wily counsellor, conduct you through
 The perplex'd windings of life's thorny brake ;
 Or that false fruit,—what it profess'd to do,—
 Your thirst to know, with wholesome beverage, slake ?
 Ah ! hapless pair, what will become of you ?
Morchead.

MAN'S ABERRATION FROM GOD.

THE rolling planets, and the glorious sun,
 Still keep that order, which they first begun :
 They their first lesson constantly repeat,
 Which their Creator, as a law, did set.
 Above, below, exactly all obey :
 But wretched men have found another way.
 Knowledge of good and evil, as at first,
 (That vain persuasion,) keeps them still accurst.
 The sacred word refusing as a guide,
 Slaves they become to luxury and pride.
 As clocks, remaining in the skilful hand
 Of some great master, at the figure stand,
 But, when abroad, neglected they do go,
 At random strike, and the false hour do show ;

So, from our Maker wandering, we stray,
 Like birds, that know not to their nests the way.
 In Him we dwelt before our exile here,
 And may, returning, find contentment there :
 True joy may find, perfection of delight,
 Behold his face, and shun eternal night.

Waller.

ENOCH.

Of one alone, 'mid this high revelry,
 Of one alone we read, who " walk'd with God,"
 And, while sin travell'd o'er the world abroad,
 Who chose the separate path of piety,
 And so " God took him," for he did not die !
 O ! incident of wondrous beauty, trod
 On though it may be, like the unprized clod,
 By *man's* coarse foot, yet to the kindling eye
 Of *childhood* most delightful. Never yet,
 Amid the musings of that tender age,
 Was there before the simple fancy set
 One, who could so their marvelling faith engage,
 As that same Saint, of whom the whole they get
 Is that he went to God, pure deathless sage !

Morehead.

THE FLOOD.

Down rush the torrents from above ; the deep
 Opens in all its fountains, ceaseless, still
 Ceaseless ;—the muddy waters eddying fill
 The valleys. High on every mound and steep,
 In crowds, men, women, children, cattle, sheep,
 Stand shivering with dismay, the horrible
 Confusion eyeing ; and, from hill to hill,
 They shout in agony, or shriek, or weep
 In vain !—the waters gain upon them,—lo !
 The ark careering past, their hands they stretch
 For help, and now you see some drowning wretch

Pursue the sacred vessel ; but on wo
 No pity must they have ; so on they go.
 Now all is one wide sea without a beach.

Morehead.

WAYS OF PROVIDENCE.

SHALL he, whose birth, maturity, and age,
 Scarce fill the circle of one summer day,—
 Shall the poor gnat, with discontent and rage,
 Exclaim that nature hastens to decay,
 If but a cloud obstruct the solar ray,
 If but a momentary shower descend?
 Or shall frail man Heaven's dread decree gainsay,
 Which bade the series of events extend
 Wide through unnumber'd worlds, and ages with-
 out end?

One part—one little part,—we dimly scan
 Through the dark medium of life's feverish dream ;
 Yet dare arraign the whole stupendous plan,
 If but that little part incongruous seem.
 Nor is that part, perhaps, what mortals deem ;
 Oft from apparent ill our blessings rise.
 Oh ! then renounce that impious self-esteem,
 That aims to trace the secrets of the skies :
 For thou art but of dust : be humble and be wise.

Beattie.

THE HERMIT.

At the close of the day, when the hamlet is still,
 And mortals the sweets of forgetfulness prove,
 When nought but the torrent is heard on the hill,
 And nought but the nightingale's song in the grove ;
 'Twas thus, by the cave of the mountain afar,
 While his harp rung symphonious, a hermit began ;
 No more with himself, or with nature, at war,
 He thought as a sage, though he felt as a man.

Ah ! why all abandon'd to darkness and wo ?
 Why, lone Philomela, that languishing fall ?
 For spring shall return, and a lover bestow,
 And sorrow no longer thy bosom inthral.
 But, if pity inspire thee, renew the sad lay,
 Mourn, sweetest complainer, man calls thee to mourn ;
 Oh ! soothe him, whose pleasures, like thine, pass away ;
 Full quickly they pass—but they never return.

Now, gliding remote on the verge of the sky,
 The moon, half extinguish'd, her crescent displays ;
 But lately I mark'd, when majestic on high
 She shone, and the planets were lost in her blaze.
 Roll on, thou fair orb, and with gladness pursue
 The path, that conducts thee to splendour again :
 But man's faded glory what change shall renew ?
 Ah fool ! to exult in a glory so vain !

'Tis night, and the landscape is lovely no more ;
 I mourn ; but, ye woodlands, I mourn not for you :
 For morn is approaching, your charms to restore,
 Perfumed with fresh fragrance, and glittering with dew.
 Nor yet for the ravage of winter I mourn :
 Kind Nature the embryo blossom will save ;
 But when shall spring visit the mouldering urn ?
 O ! when shall it dawn on the night of the grave ?

'Twas thus, by the glare of false science betray'd,
 That leads to bewilder, and dazzles to blind :
 My thoughts wont to roam, from shade onward to shade,
 Destruction before me, and sorrow behind.
 " Oh ! pity, great Father of light," then I cried,
 " Thy creature, who fain would not wander from thee,
 Lo, humbled in dust, I relinquish my pride :
 From doubt, and from darkness, thou only canst free."

And darkness and doubt are now flying away,
 No longer I roam in conjecture forlorn.
 So breaks on the traveller, faint and astray,
 The bright and the balmy effulgence of morn.
 See truth, love, and mercy in triumph descending,
 And nature all glowing in Eden's first bloom,

On the cold cheek of death smiles and roses are blending,
And beauty immortal awakes from the tomb.

Beattie.

THE LARK.

SEE the lark prunes his active wings,
Rises to heaven, and soars, and sings.
His morning hymns, his mid-day lays,
Are one continued song of praise.
He speaks his Maker, as he can,
And shames the silent tongue of man.
When the declining orb of light
Reminds him of approaching night,
His warbling vespers swell his breast,
And, as he sings, he sinks to rest.
Shall birds instructive lessons teach,
And we be deaf to what they preach?
No, ye dear nestlings of my heart,
Go, act the wiser songster's part.
Spurn your warm couch at early dawn,
And, with your song, begin the morn.
To him your grateful homage pay
Through every period of the day.
To Him your evening songs direct;
His eye shall watch; His arm protect.
Though darkness reigns, He is with you still,—
Then sleep, my babes, and fear no ill.

Cotton.

HYMN OF PRAISE.

THE rain upon the mountain shed,
The dewdrops o'er the valley spread,
In grateful incense upward rise,
And seek again their native skies.

To man alone shall blessings come,
To glad his heart, and cheer his home;
And yet to heaven no grateful prayer
 end to seek the Giver there?

Yes ! let his lips in praise be found,
 Though faint and feeble still the sound,
 Until a deeper, louder song,
 He learns amid the angelic throng.

Anonymous.

COTTAGE PRAYERS.

THEN, kneeling down to Heaven's Eternal King,
 The saint, the father, and the husband prays :
 Hope springs exulting on triumphant wing,
 That thus they all shall meet in future days :
 There ever bask in uncreated rays,
 No more to sigh or shed the bitter tear,
 Together hymning their Creator's praise,
 In such society yet still more dear,
 While circling time moves round in an eternal sphere.

Then homeward all take off their several way,
 The youngling cottagers retire to rest :
 The parent pair their *secret homage* pay,
 And proffer up to heaven the warm request,
 That He, who stills the ravens' clamorous nest,
 And decks the lily fair in flowery pride,
 Would, in the way his wisdom sees the best,
 For them and for their little ones provide ;
 But chiefly in their hearts with *grace divine* preside.

Burns.

THE SABBATH.

GLORIOUS the hour, when, on the world new-sprung
 From his creative hand, its Maker smiled,
 Saw all things very good, and rested mild
 In holy Sabbath his glad works among ;
 The morning stars in joyful chorus sung,
 Shouted for joy those blessed beings styled
 " The Sons of God," and man yet undefiled
 Was happy, sin not yet his soul had stung.—
 But there is still a Sabbath,—and not less
 But far more glorious,—from the grave when rose

He who had died a ruin'd world to bless,
 And now, victorious over all his foes,
 Before his hosts of saints triumphant goes,
 Entering his rest of heavenly holiness. *Morehead*

SABBATH BELL.

THE first note of the holy bell recalls
 The hours of childhood, when its early stroke,
 From neighbouring village, every cottage woke
 To preparation,—farm-stead,—lordly halls.
 Upon mine ear like voice of love it falls
 Maternal, as if from the grave it broke,
 Restoring sounds, which earth may not revoke,
 Where all was kindness, no word that appals !
 What have I since been doing ? Sabbath bell
 To Sabbath bell has peal'd continued chime
 Of echoing repetition, from the first
 That smote my infant thought :—and can I tell
 That, in this land of Christian promise, time
 Hath pass'd with me, like those for life who thirst ?
Morehead.

NATURE'S CHARMS.

OH ! how canst thou renounce the boundless store
 Of charms, which Nature to her votary yields !
 The warbling woodland, the resounding shore,
 The pomp of groves, and garniture of fields ;
 All that the genial ray of morning gilds,
 And all that echoes to the song of even,
 All that the mountain's sheltering bosom shields,
 And all the dread magnificence of Heaven,—
 Oh ! how canst thou renounce, and hope to be forgiven.
Beattie.

To sit on rocks ; to muse o'er flood and fell ;
 To slowly trace the forest's shady scene,
 Where things, that own not man's dominion, dwell,

And mortal foot hath ne'er or rarely been ;
 To climb the trackless mountain all unseen,
 With the wild flock, that never needs a fold ;
 Alone o'er steeps, and foaming falls to lean ;—
 This is not solitude: 'tis but to hold
 Converse with Nature's charms, and view her stores
 unroll'd. Byron.

THE HEAVENS.

I GAZE upon yon orbs of light,
 The countless stars that gem the sky ;
 Each in its sphere serenely bright,
 Wheeling its course how silently !
 While, in the mantle of the night,
 Earth and its cares and troubles lie.

Temple of light and loveliness,
 And throne of grandeur ! can it be
 That souls whose kindred loftiness
 Nature hath framed to rise to thee,
 Should pine within this narrow place,
 This prison of mortality ?

What madness, from the path of right,
 For ever leads our steps astray,
 That, reckless of thy pure delight,
 We turn from this divine array,
 To chase a shade that mocks the sight,—
 A good that vanisheth away ?

Awake, ye mortals, raise your eyes
 To yon eternal starry spheres—
 Look on these glories of the skies !
 Then answer how this world appears,
 With all its pomps and vanities,
 With all its hopes and all its fears.

What but a speck of earth, at last,
 Amidst the illimitable-sky,
 A point, that sparkles in the vast
 Effulgence of her galaxy ;
 In whose mysterious rounds, the past,
 The present, and the future lie ?

Who can look forth upon the blaze
Of heavenly hope so brightly shining,
Through the unbounded void of space
A hand unseen their course assigning,
All moving with unequal pace,
Yet in harmonious concord joining :

Who, that has seen these splendours roll,
And gazed on this majestic scene,
But sigh'd to 'scape the world's control,
Spurning its pleasures poor and mean,
To burst the bonds that bind the soul,
And pass the gulf that yawns between ?

Anonymous Translation from the Spanish.

LANDSCAPE.

EVER charming, ever new,
When will the landscape tire the view ?
The fountain's fall ; the river's flow ;
The woody valleys, warm and low ;
The windy summit, wild and high,
Roughly rushing on the sky !
The pleasant seat ; the ruin'd tower ;
The naked rock ; the shady bower ;
The town and village, dome and farm,
Each gives each a double charm,
As pearls upon an Ethiop's arm.
Now, even now, my joys run high,
As on the mountain's turf I lie,
While the wanton Zephyr sings,
And in the vale perfumes his wings ;
While the waters murmur deep ;
While the shepherd charms his sheep ;
While the birds unbounded fly,
And with music fill the sky,
Now, even now, my joys run high. *Dyer.*

VIEW FROM BLACKFORD HILL.

WHEN sated with the martial show
That peopled all the plain below,

The wandering eye could o'er it go,
 And mark the distant city glow
 With gloomy splendour red;
 For, on the smoke-wreaths huge and low,
 That round her sable turrets flow,
 The morning beams were shed,
 And tinged them with a lustre proud,
 Like that which streaks a thunder-cloud.
 Such dusky grandeur clothed the height,
 Where the huge castle holds its state,
 And all the steep slope down,
 Whose ridgy back heaves to the sky,
 Piled deep and massy, close and high,—
 MINE OWN romantic town!
 But northward far with purer blaze,
 On Ochil mountains fell the rays,
 And, as each heathy top they kiss'd,
 It gleam'd a purple amethyst.
 Yonder the shores of Fife you saw:
 Here Preston-bay, and Berwick-law;
 And, broad between them, roll'd
 The gallant Firth the eye might note,
 Whose Islands on its bosom float,
 Like emeralds chased in gold.

Scott.

ANCIENT AND MODERN EDINBURGH.

TRUE,—Caledonia's Queen is changed,
 Since, on her dusky summit ranged,
 Within its steepy limits pent,
 By bulwark, line, and battlement,
 And flanking towers, and laky flood,
 Guarded and garrison'd she stood;
 Denying entrance or resort,
 Save at each tall embattled port:
 Above whose arch suspended hung
 Portcullis, spiked with iron prong.
 That long is gone,—but not so long
 Since, early closed and opening late,
 Jealous revolved the studded gate

Whose task from eve to morning tide,
 A wicket churlishly supplied.
 Stern then and steel-girt was thy brow,
 Dun-Edin ! Oh how alter'd now,
 When, safe amid thy mountain-court,
 Thou sit'st, like Empress at her sport,
 And liberal, unconfined and free,
 Flinging thy white arms to the sea,
 For thy dark cloud, with umber'd lower,
 That hung o'er cliff, and lake, and tower,
 Thou gleam'st against the western ray
 Ten thousand lines of brighter day.

* * * *

So thou, fair city, disarray'd
 Of battled wall and rampart's aid,
 As stately seem'st, but lovelier far,
 Than in that panoply of war.
 Nor deem that, from thy fenceless throne,
 Strength and security are flown ;
 Still, as of yore, Queen of the North !
 Still canst thou send thy children forth.
 Ne'er readier at alarm-bell's call,
 Thy burghers rose to man the wall,
 Than now, in danger, shall be thine,
 Thy dauntless voluntary line ;
 For fosse and turret proud to stand,
 Their breasts the bulwark of the land.
 Thy thousands, train'd to martial toil,
 Full red would stain their native soil,
 Ere from thy mural crown there fell
 The slightest knosp or pinnacle.

Scott.

SILENCE AFTER THUNDER.

HAST thou not mark'd, when, o'er thy startled head,
 Sudden and deep the thunder-peal has roll'd,
 How, when its echoes fell, a silence dead
 Sunk on the wood, the meadow, and the wold ?
 The rye grass shakes not on the sod-built fold,
 The rustling aspen's leaves are mute and still,
 The wall-flower waves not on the ruin'd hold,

Till murmuring distant first, then near and shrill,
 The savage whirlwind wakes, and sweeps the groan-
 ing hill. *Scott.*

END OF AUTUMN.

AUTUMN departs,—from Gala's fields no more
 Come rural sounds, our kindred banks to cheer ;
 Blent with the stream, and gale that wafts it o'er,
 No more the distant reaper's mirth we hear,
 The last blithe shout hath died upon our ear,
 And harvest-home hath hush'd the clanging wain ;
 On the waste hill no forms of life appear,
 Save where, sad laggard of the autumnal train,
 Some age-struck wanderer gleans few ears of scatter'd
 grain.

Deem'st thou, these sadden'd scenes have pleasure still,
 Lov'st thou, through Autumn's fading realms to stray,
 To see the heath-flower wither'd on the hill,
 To listen to the wood's expiring lay,
 To note the red leaf shivering on the spray,
 To mark the last bright tints the mountain stain,
 On the waste fields to trace the gleaner's way,
 And moralize on mortal joy and pain ?—
 Oh ! if such scenes thou lov'st, scorn not the minstrel
 strain. *Scott.*

CHILDHOOD'S TEAR.

THE tear down childhood's cheek that flows,
 Is like the dewdrop on the rose ;
 When next the summer breeze comes by,
 And waves the bush,—the flower is dry. *Scott.*

MATERNAL HOPE.

Lo ! at the couch, where infant beauty sleeps,
 Her silent watch the mournful mother keeps.

She, while the lovely babe unconscious lies,
 Smiles on her slumbering child with pensive eyes,
 And weaves a song of melancholy joy,—
 “Sleep, image of thy father,—sleep, my boy;
 No lingering hour of sorrow shall be thine;
 No sigh, that rends thy father’s heart and mine.
 Bright, as his manly sire, the son shall be
 In form and soul; but ah! more blest than he!
 Thy fame, thy worth, thy filial love, at last,
 Shall soothe his aching heart for all the past,—
 With many a smile my solitude repay,
 And chase the world’s ungenerous scorn away.
 And say, when, summon’d from this world and thee,
 I lay my head beneath the willow tree,
 Wilt thou, sweet mourner! at my stone appear,
 And soothe my parted spirit lingering near?
 Oh! wilt thou come at evening hour, to shed
 The tears of memory o’er my narrow bed;
 With aching temples on thy hand reclined,
 Muse on the last farewell I leave behind,
 Breathe a deep sigh to winds that murmur low,
 And think on all my love and all my wo?”
 So speaks affection, ere the infant eye
 Can look regard, or brighten in reply;
 But, when the cherub lip hath learnt to claim
 A mother’s ear by that endearing name,—
 Soon as the playful innocent can prove
 A tear of pity or a smile of love,
 Or cons his murmuring task beneath her care,
 Or lisps, with holy look, his evening prayer,
 Or gazing, mutely pensive, sits to hear
 The mournful ballad warbled in his ear,—
 How fondly looks admiring Hope the while
 At every artless tear and every smile!
 How glows the joyous parent to descry
 A guileless bosom true to sympathy! *Campbell.*

PARENTAL AFFECTION TOWARDS A DUTIFUL CHILD.

SOME feelings are to mortals given,
 With less of earth in them than heaven;

And, if there be a human tear
 From passion's dross refined and clear,
 A tear so limpid and so meek,
 It would not stain an angel's cheek,—
 'Tis that, which pious fathers shed
 Upon a dateous daughter's head. *Scott.*

SCENES OF EDUCATION.

AH! happy hills, ah! pleasing shade,
 Ah! fields beloved in vain,
 Where once my careless childhood stray'd,
 A stranger yet to pain!
 I feel the gales, that from ye blow,
 A momentary bliss bestow,
 As, waving fresh their gladsome wing,
 My weary soul they seem to soothe,
 And, redolent of joy and youth,
 To breathe a second spring.

Say, Father Thames, (for thou hast seen
 Full many a sprightly race,
 Disporting on thy margin green,
 The paths of pleasure trace,) *Who*
foremost now delight to cleave
 With pliant arm, thy glassy wave?
 The captive linnet *which* inthral?
What idle progeny succeed,
 To chase the rolling circle's speed,
 Or urge the flying ball?

While some, on earnest business bent,
 Their murmuring labours ply
 'Gainst graver hours, that bring constraint
 To sweeten liberty;
 Some bold adventurers disdain
 The limits of their little reign,
 And unknown regions dare descry;
 Still, as they run, they look behind,
 They hear a voice in every wind,
 And snatch a fearful joy.

Gay hope is theirs by fancy fed,
 Less pleasing when possess'd;
 The tear forgot as soon as shed,
 The sunshine of the breast:
 Theirs buxom health of rosy hue;
 Wild wit, invention ever new,
 And lively cheer of vigour born;
 The thoughtless day, the easy night,
 The spirits pure, the slumbers light,
 That fly the approach of morn. *Gray.*

LOVE OF COUNTRY.—SCOTLAND.

BREATHES there the man with soul so dead,
 Who never to himself hath said,
 This is my own,—my native land!
 Whose heart hath ne'er within him burn'd,
 As home his footsteps he hath turn'd,
 From wandering on a foreign strand!
 If such there breathe, go, mark him well,
 For him no minstrel raptures swell.
 High though his titles, proud his name,
 Boundless his wealth, as wish can claim;
 Despite those titles, power, and pelf,
 The wretch, concentred all in self,
 Living, shall forfeit fair renown,
 And, doubly dying, shall go down
 To the vile dust, from whence he sprung,—
 Unwept, unhonour'd, and unsung.

O Caledonia! stern and wild,
 Meet nurse for a poetic child!
 Land of brown heath and shaggy wood,
 Land of the mountain and the flood,
 Land of my sires! what mortal hand
 Can e'er untie the filial band,
 That knits me to thy rugged strand? *Scott.*

LAND of my fathers! though no mangrove here,
 O'er thy blue streams, her flexile branches rear,

Nor scaly palm her finger'd scions shoot,
 Nor luscious guava wave her yellow fruit,
 Nor golden apples glimmer from the tree,—
 Land of dark heaths and mountains!—thou art free.
Leyden.

ON LEAVING HOME.

ADIEU! adieu! my native shore
 Fades o'er the waters blue;
 The night-winds sigh, the breakers roar,
 And shrieks the wild seamew:
 Yon sun, that sets upon the sea,
 We follow in his flight;
 Farewell a while to him and thee,
 My native land,—Good night.

A few short hours, and he will rise
 To give the morrow birth;
 And I shall hail the main and skies,—
 But not my mother earth.
 Deserted is my own good hall,
 Its hearth is desolate;
 Wild weeds are gathering on the wall;
 My dog howls at the gate.

“Come hither, hither, my little page!
 Why dost thou weep and wail?
 Or dost thou dread the billows' rage,
 Or tremble at the gale?
 But dash the tear-drop from thine eye;
 Our ship is swift and strong;
 Our swiftest falcon scarce can fly
 More merrily along.”

“Let winds be shrill, let waves run high,
 I fear not wave nor wind;
 Yet marvel not, Sir Childe, that I
 Am sorrowful in mind;

For I have from my father gone ;
 A mother, whom I love ;
 And have no friend save these alone,
 But thee,—and ONE above.

“ My father bless'd me fervently,
 Yet did not much complain ;
 But sorely will my mother sigh,
 Till I come back again.”
 Enough, enough, my little lad,
 Such tears become thine eye ;
 If I thy guileless bosom had,
 Mine own would not be dry.

Byron.

WAR.

THE hunting tribes of air and earth
 Respect the brethren of their birth ;
 Nature, who loves the claim of kind,
 Less cruel chase to each assign'd.
 The falcon, poised on soaring wing,
 Watches the wild-duck by the spring ;
 The slowhound wakes the fox's lair ;
 The greyhound presses on the hare :
 The eagle pounces on the lamb ;
 The wolf devours the fleecy dam ;
 Even tiger fell, and sullen bear,
 Their likeness and their lineage spare.—
 Man only mars kind Nature's plan,
 And turns the fierce pursuit on man ;
 Plying war's desultory trade,
 Incursion, flight, and ambuscade,
 Since Nimrod, Cush's mighty son,
 At first the bloody game began.

Scott.

LANDING OF THE BRITISH ARMY IN THE PENINSULA.

It was a dread, yet spirit-stirring sight !
 The billows foam'd beneath a thousand oars,
 Fast as they land, the red-cross ranks unite,
 Legions on legions brightening all the shores.

Then banners rise, and cannon-signal roars,
 Then peals the warlike thunder of the drum,
 Thrills the loud life, the trumpet-flourish pours,
 And patriot hopes awake, and doubts are dumb,
 For, bold in freedom's-cause, the bands of ocean come!

A various host they come,—whose ranks display
 Each mode in which the warrior meets the fight.
 The deep battalion locks its firm array,
 And meditates his aim the marksman light;
 Far glance the beams of sabres flashing bright;
 There mounted squadrons shake the echoing mead;
 Lacks not artillery, breathing flame and might;
 Nor the fleet ordnance, whirl'd by rapid steed,
 That rivals lightning's flash in ruin and in speed.

A various host,—from kindred realms they come,
 Brethren in arms, but rivals in renown.—
 For yon fair bands shall merry England claim,
 And, with their deeds of valour deck her crown.
 Hers their bold port, and hers their martial frown,
 And hers their scorn of death in freedom's cause,
 Their eyes of azure, and their locks of brown,
 And the blunt speech, that bursts without a pause,
 And freeborn thoughts, which league the soldier with
 the laws.

And, O loved warriors of the minstrel's land!
 Yonder your bonnets nod, your tartans wave!
 The rugged form may mark the mountain band,
 And harsher features, and a mien more grave;
 But ne'er in battle-field throbb'd heart so brave,
 As that which beats beneath the Scottish plaid,
 And, when the pibroch makes the battle rave,
 And level for the charge your arms are laid,
 Where lives the desperate foe, that for such onset staid?

Hark! from yon stately ranks what laughter rings,
 Mingling wild mirth with war's stern minstrelsy,
 His jest while each blithe comrade round him flings,
 And moves to death with military glee:

Boast, Erin, boast them ! tameless, frank, and free ;
 In kindness warm, and fierce in danger known ;
 Rough Nature's children, humorous as she :
 And *HE*, yon chieftain,—strike the proudest tone
 Of thy bold harp, green Isle !—the hero is thine own.
Scott.

TRIUMPHS OVER BONAPARTE.

Oh ! who, that shared them, ever shall forget
 The emotions of the spirit-raising time,
 When breathless in the mart the couriers met,
 Early and late, at evening and at prime ;
 When the loud cannon, and the merry chime,
 Hail'd news on news, as field on field was won,
 When hope, long doubtful, soar'd at length sublime,
 And our glad eyes, awake as day begun,
 Watch'd joy's broad banner rise to meet the rising sun !

Oh ! these were hours, when thrilling joy repaid
 A long, long course of darkness, doubts, and fears.
 The heart-sick faintness of the hope delay'd,
 The waste, the wo, the bloodshed, and the tears,
 That track'd with terror twenty rolling years,
 All was forgot in that blithe jubilee !
 Her downcast eye even pale Affliction rears,
 To sigh a thankful prayer, amid the glee,
 That hail'd the despot's fall, and peace, and liberty.
Scott.

WATERLOO.

Look forth, once more, with soften'd heart,
 Ere from the field of fame we part ;
 Triumph and sorrow border near,
 And joy oft melts into a tear.
 Alas ! what links of love that morn,
 Has war's rude hand asunder torn !

For ne'er was field so sternly fought;
 And ne'er was conquest dearer bought.
 Here, piled in common slaughter, sleep
 Those, whom affection long shall weep;
 Here rests the sire, that ne'er shall strain
 His orphans to his heart again;
 The son, whom, on his native shore,
 The parent's voice shall bless no more;
 The bridegroom, who has hardly press'd
 His blushing consort to his breast;
 The husband, whom, through many a year,
 Long love and mutual faith endear.
 Thou canst not name one tender tie,
 But here, dissolved, its reliques lie!
 Oh! when thou seest some mourner's veil
 Shroud her thin form and visage pale;
 Or mark'st the matron's bursting tears
 Stream, when the stricken drum she hears;
 Or seest how manlier grief, suppress'd,
 Is labouring in a father's breast,—
 With no inquiry vain pursue
 The cause, but think on Waterloo.

* * * *

Forgive, brave dead, the imperfect lay!
 Who may your names, your numbers say?
 What high-strung harp, what lofty line,
 To each the dear-earn'd fame assign,
 From high-born chiefs of martial fame,
 To the poor soldier's lowlier name?
 Lightly ye rose that dawning day,
 From your cold couch of swamp and clay,
 To fill, before the sun was low,
 The bed that morning cannot know.—
 Oft may the tear the green sod steep,
 And sacred be the heroes' sleep,
 Till time shall cease to run;
 And ne'er, beside their noble grave,
 May Briton pass, and fail to crave
 A blessing on the fallen brave,
 Who fought with Wellington.

Scott.

THE SAILOR'S HOPE.

Poor child of danger, nursing of the storm,
 Sad are the woes, that wreck thy manly form !
 Rocks, waves, and winds, the shatter'd bark delay ;
 Thy heart is sad, thy home is far away.
 But hope can here her moonlight vigils keep,
 And sing to charm the spirit of the deep.
 Swift as yon streamer lights the starry pole,
 Her visions warm the watchman's pensive soul.
 His native hills, that rise in happier climes,
 The grot, that heard his song of other times,
 His cottage home, his bark of slender sail,
 His glassy lake, and brownwood blossom'd vale,
 Rush on his thought ; he sweeps before the wind,
 Treads the loved shore he sigh'd to leave behind ;
 Meets, at each step, a friend's familiar face,
 And flies, at last, to Helen's long embrace ;
 Wipes from her eye the rapture-speaking tear,
 And clasps, with many a sigh, his children dear !
 While, long neglected, but at length caress'd,
 His faithful dog salutes the smiling guest,
 Points to the master's eyes, (where'er they roam,)
 His wistful face, and whines a welcome home.

Campbell.

SUPERSTITIOUS TALES.

THE lated peasant shunn'd the dell,
 For Superstition wout to tell
 Of many a grisly sound and sight,
 Scaring its path at dead of night.
 When Christmas logs blaze high and wide,
 Such wonders speed the festal tide,
 While Curiosity and Fear,
 Pleasure and Pain, sit crouching near,
 Till childhood's cheek no longer glows,
 And village-maidens lose the rose.
 The thrilling interest rises higher,
 The circle closes nigh and nigher,

And shuddering glance is cast behind,
 As louder moans the wintry wind.—
 Nor think to village swains alone
 Are these unearthly terrors known;
 For not to rank nor sex confined
 Is this vain ague of the mind.
 Hearts firm as steel, as marble hard,
 'Gainst faith, and love, and pity barr'd,
 Have quaked, like aspen leaves in May,
 Beneath its universal sway.

Scott.

FANCIED HAPPINESS.

Wo to the youth, whom Fancy gains,
 Winning from Reason's hands the reins;
 Pity and wo! for such a mind
 Is soft, contemplative, and kind;
 And wo to those, who train such youth,
 And spare to press the rights of truth,
 The mind to strengthen and anneal,
 While on the stithy glows the steel!
 Oh! teach him, while your lessons last,
 To judge the present by the past;
 Remind him of each wish pursued,
 How rich it glow'd with promised good;
 Remind him of each wish enjoy'd,
 How soon his hopes possession cloy'd!
 Tell him we play unequal game,
 Whene'er we shoot by fancy's aim;
 And, ere he strip him for the race,
 Show the conditions of the chase.
 Two sisters by the goal are set,
 Cold Disappointment and Regret.
 One disenchant the winner's eyes,
 And strips of all its worth the prize;
 While one augments its gaudy show,
 More to enhance the loser's wo.
 The victor sees his fairy gold
 Transform'd, when won, to drossy mould;
 But still the vanquish'd mourns his loss,
 And rues, as gold, that glittering dross.

Scott.

NO PERFECT HAPPINESS BELOW.

No longer I follow a sound,
 No longer a dream I pursue,
 O happiness! not to be found,
 Unattainable treasure, adieu.

I have sought thee in splendour and dress,
 In the regions of pleasure and taste;
 I have sought thee, and seem'd to possess,
 But have proved thee a vision at last.

An humble ambition and hope
 The voice of true wisdom inspires;
 'Tis sufficient, if peace be the scope,
 And the summit, of all our desires.

Peace may be the lot of the mind,
 That seeks it in meekness and love.
 But rapture and bliss are confined
 To the glorified spirits above!

Comper.

HUMAN LIFE.

OH! let the soul its slumber break,
 Arouse its senses and awake,
 To see how soon
 Life, with its glories, glides away,
 And the stern footstep of decay
 Comes stealing on:

How pleasure, like the passing wind,
 Blows by, and leaves us nought behind,
 But grief at last;
 How, still, our present happiness
 Seems to the wayward fancy less,
 Than what is past.

And, while we eye the rolling tide,
Down which our flying minutes glide
 Away so fast ;
Let us the present hour employ,
And deem each future dream of joy
 Already past.

Let no vain hope deceive the mind—
No happier let us hope to find
 To-morrow than to day ;
Our golden dreams of yore were bright,
Like them the present shall delight—
 Like them decay.

Our lives like hasting streams must be,
That, into one engulfing sea,
 Are doom'd to fall :
The sea of death, whose waves roll on,
O'er king and kingdom, crown and throne,
 And swallow all.

Alike the river's lordly tide,
Alike the humble riv'lets glide
 To that sad wave :
Death levels poverty and pride,
And rich and poor sleep, side by side,
 Within the grave.

Say, then, how poor and little worth
Are all those glittering toys of earth,
 That lure us here ;
Dreams of a sleep, that death must break,
Alas ! before it bids us wake,
 Ye disappear.

Long ere the damps of death can blight,
The cheek's pure glow of red and white
 Hath pass'd away :
Youth smiled, and all was heavenly fair ;—
Age came, and laid his finger there,
 And where are they ?

Where are the strength, that mock'd decay,
 The step that rose so light and gay,
 The heart's blithe tone?
 The strength is gone, the step is slow,
 And joy grows weariness and wo,
 When age comes on.

Anonymous Translation from the Spanish.

PANGS OF GUILT.

AND oh that pang, where more than madness lies!
 The worm that will not sleep, and never dies;
 Thought of the gloomy day, and ghastly night,
 That dreads the darkness, and yet loathes the light;
 That winds around, and tears the quivering heart,—
 Ah! wherefore not consume it and depart!

Byron.

AMID the dreary gloom of night, I cry
 "When will the morn's once pleasing scenes return?"
 Yet, what can morn's returning ray supply,
 But foes that triumph, or but friends that mourn?

Alas! no more that joyous morn appears,
 That led the tranquil hours of spotless fame;
 For I have steep'd a father's couch in tears,
 And tinged a mother's glowing cheek with shame.

The vocal birds, that raise their matin strain,
 The sportive lambs, increase my pensive moan;
 All seem to chase me from the cheerful plain,
 And talk of truth and innocence alone.

Now the grave old alarm the gentler young,
 And all my fame's abhorr'd contagion flee;
 Trembles each lip, and falters every tongue,
 That bids the morn propitious smile on me?

Shenstone.

BOOKS.

BUT, what strange art, what magic can dispose
 The troubled mind to change its native woes,
 Or lead us, willing, from ourselves, to see
 Others more wretched, more undone than we?
This books can do;—nor this alone; they give
 New views to life, and teach us how to live.
 They soothe the grieved; the stubborn they chastise;
 Fools they admonish; and confirm the wise.
 Their aid they yield to all: they never shun
 The man of sorrow nor the wretch undone.
 Unlike the hard, the selfish, and the proud,
 They fly not sullen from the suppliant crowd:
 Nor tell to various people various things,
 But show to subjects what they show to kings.
 Bless'd be the gracious Power! who taught mankind
 To stamp a lasting image of the mind.
 Beasts may convey, and tuneful birds may sing,
 Their mutual feelings in the opening spring:
 But man alone has skill and power to send
 The heart's warm dictates to the distant friend:
 'Tis his alone to please, instruct, advise
 Ages remote, and nations yet to rise. *Crabbe.*

WISDOM OF SECURING HAPPINESS INDEPENDENTLY
 OF SOCIETY.

MAN, a gregarious creature, loves to fly
 Where he the trackings of the herd can spy;
 Still to be one with many he desires,
 Although it leads him through the thorns and briers.
 A few,—but few, there are, who, in the mind,
 Perpetual source of consolation find;
 The weaker many to the world will come
 For comforts seldom to be found from home.
 When the faint hands no more a brimmer hold,
 When flannel-wreaths the useless limbs infold,
 The breath impeded, and the bosom cold;
 When half the pillow'd man the palsy chains,
 And the blood falters in the bloated veins,—

Then, as our friends no further aid supply,
 Than hope's cold phrase, and courtesy's soft sigh,
 We should that comfort for ourselves ensure,
 Which friends could not, if we could friends procure.
 Early in life, when we can laugh aloud,
 There's something pleasant in a social crowd,
 Who laugh with us: but will such joy remain,
 When we lie struggling on the bed of pain?
 When our physician tells us with a sigh
 No more on hope and science to rely,
 Life's staff is useless then: with labouring breath
 We pray for hope divine—the staff of death.—
 This is a scene, which few companions grace,
 And where the heart's first favourites yield their place.
 Here all the aid of man to man must end,
 Here mounts the soul to her eternal Friend;
 The tenderest love must here its tie resign,
 And give the aspiring heart to love divine.
 Men feel their weakness, and to numbers run,
 Themselves to strengthen, or themselves to shun;
 But, though to this our weakness may be prone,
 Let's learn to live,—for we must die,—alone!

Crabbe.

OLD AGE.

THE seas are quiet, when the winds give o'er;
 So calm are we, when passions are no more!
 For then we know how vain it was to boast
 Of fleeting things, so certain to be lost.
 Clouds of affection, from our younger eyes,
 Conceal that emptiness, which age describes.
 The soul's dark cottage, batter'd and decay'd,
 Lets in new light through chinks that time has made.
 Stronger by weakness, wiser men become,
 As they draw near to their eternal home:
 Leaving the old, both worlds at once they view,
 That stand upon the threshold of the new.

Waller.

NIGHT PIECE ON DEATH.

How deep yon azure dies the sky,
Where orbs of gold unnumber'd lie ;
While, through their ranks, in silver pride,
The nether crescent seems to glide.
The slumbering breeze forgets to breathe ;
The lake is smooth and clear beneath,
Where once again the spangled show
Descends, to meet our eyes below.
The grounds, which on the right aspire,
In dimness from the view retire.
The left presents a place of graves,
Whose wall the silent water laves.
That steeple guides thy doubtful sight,
Among the livid gleams of night.
There pass, with melancholy state,
By all the solemn heaps of fate,
And think, as softly sad you tread
Above the venerable dead,
“ Time was, like thee, they life possess,
“ And time shall be, that thou shalt rest.”
Those with bending osier bound,
That nameless heave the crumbled ground,
Quick to the glancing thought disclose
Where toil and poverty repose.
The flat smooth stones that bear a name,
(The chisel's slender help to fame,
Which, ere our set of friends decay,
Their frequent steps may wear away,)
A middle race of mortals own,
Men, half ambitious, all unknown.
The marble tombs, that rise on high,
Whose dead in vaulted arches lie ;
Whose pillars swell with sculptured stones,
Arms, angels, epitaphs, and bones,—
These, all the poor remains of state,
Adorn the rich, or praise the great ;
Who, while on earth in fame they live,
Are senseless of the fame they give.
Ha ! while I gaze, pale Cynthia fades ;
The bursting earth unveils the shades !

All slow, and wan, and wrapt with shrouds,
 They rise in visionary crowds ;
 And all with sober accent cry,
 " Think, mortal, what it is to die."
 Now, from yon black and funeral yew,
 That bathes the charnel-house with dew,
 Methinks I hear a voice begin,
 (Ye ravens, cease your croaking din,
 Ye tolling clocks, no time resound
 O'er the long lake and midnight ground !)
 It sends a peal of hollow groans,
 Thus speaking from among the bones ;
 " When men my scythe and darts supply,
 How great a king of fears am I !
 They view me like the last of things ;
 They make, and then they draw my strings ;
 Fools, if you less provoked your fears,
 No more my spectre form appears ;
 Death's but a path that must be trod,
 If man would ever pass to God :
 A port of calms, a state to ease
 From the rough rage of swelling seas."
 Why then thy flowing sable stoles,
 Deep pendent cypress, mourning poles,
 Loose scarfs to fall athwart thy weeds,
 Long palls, drawn hearses, covered steeds,
 And plumes of black, that, as they tread,
 Nod o'er the escutcheons of the dead !
 Nor can the parted body know,
 Nor wants the soul these forms of woe.
 As men who long in prison dwell,
 With lamps that glimmer round the cell,
 Whene'er their suffering years are run,
 Spring forth to greet the glittering sun ;
 Such joy, though far transcending sense,
 Have pious souls at parting hence.
 On earth, and in the body, placed,
 A few and evil years they waste :
 But, when their chains are cast aside,
 See the glad scene unfolding wide ;
 Clap the glad wing, and tower away,
 And mingle with the blaze of day ! *Parnell.*

IMMORTALITY OF THE SOUL.

THE spirit shall return to Him,
 That gave its heavenly spark ;
 Yet think not, Sun, it shall be dim,
 When thou thyself art dark !
 No ! it shall live again, and shine
 In bliss unknown to beams of thine,
 By Him recall'd to breath,
 Who captive led captivity,
 Who robb'd the grave of victory,—
 And took the sting from death. *Campbell.*

CHRISTIAN HOPE.

DAUGHTER of Faith ! awake, arise, illumine
 The dread unknown, the chaos of the tomb.
 Melt and dispel, ye spectre doubts, that roll
 Cimmerian darkness on the parting soul !
 Fly, like the moon-eyed herald of dismay,
 Chased on his night-steed by the star of day ;
 The strife is o'er,—the pangs of nature close,
 And life's last rapture triumphs o'er her woes.
 Hark ! as the spirit eyes with eager gaze
 The noon of Heaven, undazzled by the blaze,
 On heavenly winds that waft her to the sky,
 Float the sweet tones of star-born melody ;
 Wild as that hallow'd anthem sent to hail
 Bethlehem's shepherds in the lonely vale,
 When Jordan hush'd his waves, and midnight still
 Watch'd on the holy towers of Zion hill !
 Soul of the just ! companion of the dead !
 Where is thy home, and whither art thou fled ?
 Back to its heavenly source thy being goes,
 Swift as the comet wheels to whence he rose ;
 Doom'd on his airy path a while to burn,
 And doom'd, like thee, to travel and return. *Campbell.*

THE LAST DAY.

THAT day of wrath! that dreadful day!
 When heaven and earth shall pass away,
 What power shall be the sinner's stay,
 How shall he meet the dreadful day?

When shrivelling, like a parched scroll,
 The flaming heavens together roll;
 When louder yet, and yet more dread!
 Swells the high trump, that wakes the dead.

Oh! on that day, that wrathful day,
 When man to judgment wakes from clay,
 BE THOU the trembling sinner's stay,
 Though heaven and earth shall pass away.
Scott.

GREAT God, what do I see and hear!
 The end of things created!
 The Judge of mankind doth appear
 On clouds of glory seated!
 The trumpet sounds! the graves restore
 The dead which they contained before!
 Prepare, my soul, to meet him.

The dead in Christ shall first arise
 At the last trumpet's sounding,
 Caught up to meet him in the skies,
 With joy their Lord surrounding.
 No gloomy fears their souls dismay;
 His presence sheds eternal day,
 On those prepared to meet him.
Luther's Hymn.

FINIS.





